Better Crops

The Pocket Book of Agriculture.

December 1925 10 Cents

Inside: Self Praise—Both Ends and the Middleman—Fertilizer Efficiency—Dust Means Bust—Southern Strawberries.

A Tribute to Extension Workers

Christmas Day on the farm will be a little more happy and a little more prosperous than usual.

From all parts of the country, crop and market reports have been favorable. Of course there were a few exceptions, but as a whole, the farm has prospered this season.

Large mail-order houses report exceedingly good farm business; more automobiles are being purchased by the farmer than ever before; a greater percentage of farm boys and girls are going to college—all reports point toward prosperity on the farm.

What greater tribute can extension workers receive in return for their study and cooperation with the farmer?

During the coming season, the agriculturists associated with our Soil & Crop Service will gladly cooperate with extension workers—and do their share to make Christmas 1926 even happier and more prosperous than this year.

Potash Importing Corporation of America

10 Bridge Street, New York City

Better Crops

The Pocket Book of Agriculture

VOLUME V NUMBER FOUR

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Peace on
Earth;
Good Will
toward Men

Better Crops

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Self PRAISE

By Jeff McDermid

I BECOME each day more firmly convinced that such things as one's character, honesty, virtue, ability and leadership, cannot be increased one jot or tittle by one's talking about them, or raising thunderous ballyhoos in their regard.

In fact I now believe that to advertise one's virtue is to force men to question it; to proclaim loyalty is to say that it exists in outline only; and to claim leadership is to startle the universe actively toward proving that the mantle belongs on other shoulders.

In Hamlet, Shakespeare has a little play within the play wherein a Queen makes violent show of protesting her love for her King. She declines her head on his shoulder, lays him on a bank of flowers, sees him asleep — and leaves him, passionately and volubly explaining to the audience her tender regard for the King.

Hamlet, in the audience watching the playlet, you remember, turns to his Queen-mother and asks, "Madam, how you like this play?"

To which the Queen a bit cynically answers, "The lady protests too much, methinks!" And true enough, a moment later comes in a fellow, very evidently a hireling of the Queen, takes off the crown from the sleeping King's head,

pours poison in his ears, and tippitoes out.

The playlet ends with the Queen, after much passionate lament over the queer, inexplicable taking off of her late spouse, accepting the proffered love of the Poisoner!

"The lady protests too much'."

And thus does Shakespeare cleverly warn those in his audience who can see and think to beware of those who too strenuously protest their regard—their voices are soothing, but their later deeds may spring the trap their kind words set.

LOYALTY is a matter of deeds, not voice. And its strength is not swelled by pumping it full of sweetened wind. Either one is loyal to a person, a creed, a business or a plan—or one is not. "Give me the ready hand rather than the ready tongue", said Garibaldi.

A man's whole attitude is essenced in a single deed and no amount of effervescent, sparkling explaining can prove more than is revealed by analyzing that deed in the test tube of time. The cynic, His Dictionary, states: "An hour overtime is worth two protestations of loyalty."

There are only two ways to prove anything: the first by deed, by actualities which we can see, feel, hear and smell; and the second by words.

We are rather prone, I feel, to accept empty words in lieu of facts, appearance in lieu of authenticity, when after all, facts are the only nourishment upon which truth may feed and thrive. Truth strangles, sucks its breath and languishes upon a diet of sugar-coated honey-phrases. Our claim that we are too busy to dig for the facts in every case, and that we must accept things at their face-value as they are presented to us leads us into many false morasses of judgment.

Give a man a monocle, a red sash across his strutting bosom, a high hat, and a haughty air, and we say, "Here is a nobleman". We are too wrapped up in our own ceaseless turmoil to investigate and peel him to the second layer where lies the red undershirt of the janitor who is masquerading in the borrowed haberdashery of the duke.

"The world is full of a number of things"—and because this is so, and because the world is also full of opportunists who seize upon every chance to mislead us into hallucinations that they are the jehovahs of the hour, we are constantly having foisted upon us falsities and fakes.

And those who have something we need, seeing this state of things and fearing that we will overlook the inherent virtues in their article and be deceived by the sugary-sweet enticements, blandishments and cajoleries of the seductive fakerino, feel the urge coming over them to put their virtues on record.

The man of ability, unwilling to await the busy world's discovery of his competency and power to perform, starts to spout succinct examples of his success.

THE honest engrosses the fact of his honesty upon the minds of his auditors in no uncertain terms; the loyal pleads his loyalty and the leader ballyhoos his leadership.

What is the result? We begin at once to say of him who protests thus volubly his honesty, "How much has he actually stolen?" And of the one who proclaims his abject fidelity, "We must watch him more closely."

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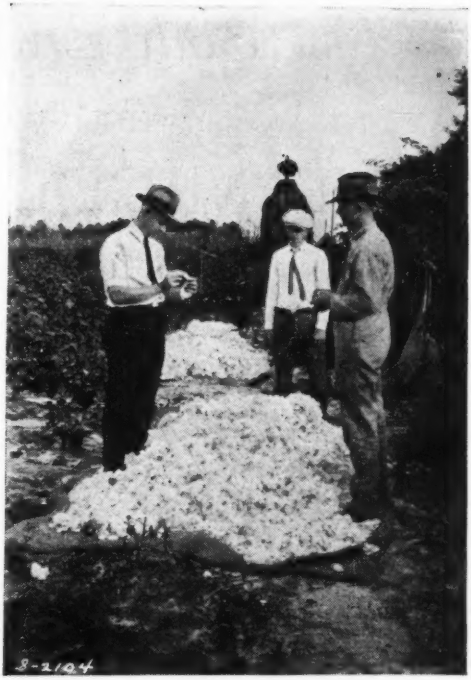
POTASH on CLAY SOILS

By

F. J. *Jeter*

North Carolina State
College of Agriculture



RESULTS being secured from a demonstration in Cherryville township of Gaston County, North Carolina, indicate that at least four per cent potash in the fertilizer mixture used under cotton on the soils of that township will pay good returns.

The demonstration made under the supervision of L. B. Altman, county agent, is on the farm of J. A. Hager. It was put in because for several years the farmers of the township have suffered with the leaves of their cotton shedding and the plants dying in early summer.

A test was made to determine what percentage of potash was necessary to prevent this trouble. It was found during the summer that on the plots where no potash was used or where only two per cent of potash was used, the plants were very badly affected. On those plots where from four to six per cent of potash was contained in the mixture, the plants were not affected by the trouble and went through the summer in a thriving, healthy condition.

Mr. Altman reports that actual results in weights of seed cotton cannot be given at this time as Mr. Hager has picked the cotton one time without securing the weights. Mr. Altman is confident, however, that at least four per cent of potash should be used in the fertilizer mixtures for cotton on this type of soil.

Both Ends and THE MIDDLEMAN

By

Arthur P. Chew
United States Department of Agriculture

"Who made that wagon?"
"It wasn't made. It was brought on."

Thus local idiom in a Missouri village 50 years ago celebrated the coming of the railroad, and the distinction thereafter necessary between locally made goods and things "brought on" by railroad from the outside world. Before the advent of the railroad, the place had been almost self-sufficient. People had ground their own flour, spun their own yarn, made their own clothing, tanned their own leather, made their own shoes, built their own plows and wagons. An exchange of services among neighbors made the "distribution problem" negligible. There were few middlemen's charges to worry about.

But the coming of the railroad changed all that. It brought the community into immediate touch with a surprising new fact; namely, that under modern conditions of production and marketing it often costs more to sell goods than to produce them. "Brought on" suits, for example, were plainly not as durable, or made of as good material, as the home-made kind. Yet they cost as much and sometimes more. Of course they were stylish, and they began to acquire a vogue after some of the bolder spirits had braved public opinion by attending church in "brought on" clothes. This, however, didn't alter the fact that there wasn't the same sheer value in the new stuff.

Today that Missouri village is a big town, but it is still wondering why distribution often costs so much more than producion.

AN economist engaged in studying modern distribution costs, who passed his boyhood in the Missouri village in question, related the foregoing bit of economic history to me. He said the importance of the change signalized by the invention of the term "brought on" was so great and so complex that no one has ever been able exactly to measure it. It is known, of course, that distribution nowadays is often more costly than production.

"It costs more to sell and deliver

A successful farmers' curb market, Roanoke, Virginia

the marketable products into which agricultural commodities are converted than to produce and manufacture them," declared a joint congressional commission which investigated marketing costs in 1921 and 1922. But the hard question is whether modern high costs of distribution are fairly compensated by the decrease in production costs that results from high specialization of labor and from efficient large-scale production for world-wide markets.

"Frankly, I give it up," said the economist. "It is fairly easy to measure the spread between the price of farm products at the farm and their price in the city. Thus in New York City the growers of Washington apples, according to a recent Government study, received only $1.18 out of a retail price of $5 a box. Only about 13.35 per cent of the price of bread is returned to the farmer for the wheat used. There is a spread of about 47 per cent of the consumer's price between the wholesale and the retail price of fruits and vegetables in New York City.

"I could pile up examples of this kind indefinitely, all drawn from official sources. For Texas cabbage, in 1920 and 1921, the growers received only a little over 10 per cent of the wholesale price. Cauliflower growers in Colorado received only a little more than 30 per cent of the wholesale price. Potato growers received from around 55 to 78 per cent of the wholesale price, the proportions varying roughly with the distance of the growers from their principal markets. Another big whack out of the final consumer's price went for retailing.

"But such data doesn't really touch the vital problem. It is important to know how much we pay for production and how much for distribution. When it is realized how big an item distribution is, we shall be better prepared to tackle the job of cutting it down.

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¶Vital Messages on farm credit, eliminating waste, developing buying power and how the National Fertilizer Association helps the manufacturer, the distributor and the farmer.—

The N. F. A. Holds Southern Convention

By *the* Editors

A LARGE number of members and friends of the National Fertilizer Association gathered at the first Annual Southern Convention held at the Hotel Biltmore, Atlanta, Georgia, November 9 to 11.

The present National Fertilizer Association is a consolidation of the former National Fertilizer Association and the Southern Fertilizer Association. That this consolidation is proving a marked success not only in extending the usefulness of the Association but in strengthening the service it gives to members through the work of its many committees, was evident throughout the convention.

The President, Spencer L. Carter, in his opening address gave an excellent review of the progress made in organizing the work since the consolidation of the two associations on June 15, 1925. The office forces are now housed in the same building in Washington and an efficient organization has been perfected. Branch offices have been established at Atlanta, Georgia; Shreveport, Louisiana; Chicago, Illinois; Raleigh, North Carolina and Bellows Falls, Vermont.

The President emphasized the point that one of the most important activities to be undertaken by the association is the standardization of formulas. It is, however, a big problem and will require a great deal of work to accomplish successfully.

CHARLES J. BRAND, executive secretary and treasurer, presented a report showing good progress. Eighty-five to 90 per cent of the total fertilizer tonnage is now represented by the association.

Of special interest to agricultural experiment stations, county agents and farmers, is the work of the Soil Improvement Committee now organized in two divisions one for the north with headquarters at Washington, H. R. Smalley, director, and one for the South with headquarters at Atlanta, J. C. Pridmore, director.

An able report of the organization of this committee was given by Warner D. Huntington, the chairman. Mr. J. C. Pridmore said that the work in the Southern Division is progressing very favorably. The work of organization is completed, and it is ready to do all that will be required of it. A branch office has been opened at Raleigh, North Carolina, W. F. Pate, agronomist in charge; and another at Shreveport, Louisiana, in charge of C. P. Blackwell, agronomist. C. A. Whittle is editorial manager, and W. H. Sachs, agronomist, both at the Atlanta office.

Fellowships have been established by the Southern Division at the agricultural colleges of North Carolina, South Carolina, Mississippi and Georgia. The Fellowship at Mississippi is to work out the problem of the economic value of potash in fertilizers with special reference to its use in the control of wilt and rust in cotton. The fact that high yields are closely associated with maximum profits from the use of fertilizer, was also clearly demonstrated by charts.

JOHN I. TIERNEY, Assistant to the President, gave a report of the Joint Washington office with the manufacturing chemists of the United States, particularly with reference to pending legislation on the use of Muscle Shoals.

Other outstanding features on the program were three addresses by men of national prominence. The Hon. Robert A. Cooper, commissioner and executive officer, Federal Farm Loan Bureau, U. S. Treasury Department, gave a forceful address on "Financing the Farmer with Special Reference to the Federal Intermediate Credit Banks."

Praise was given the Intermediate Credit Banks by Mr. Cooper. He pointed out the vital differences between commercial banks and the credit banks and the advantages to the farmer who is not able to obtain the proper credit from home banks. Very special emphasis was laid by the speaker on the necessity for further crop diversification to establish stable values on which credit could be obtained. The one crop system of farming was a much poorer risk.

"Elimination of Waste in American Industries" was the subject of a very strong and practical address by Major Arthur E. Foote, assistant chief, Division of Simplified Practice, U. S. Department of Commerce. Through Major Foote, Secretary Hoover sent his best wishes for the continued success of the association.

AS is well known, Secretary Hoover has always taken an active interest in industry. Under his leadership intensive studies have been made of many industries. One of such studies has been embodied in the Division of Simplified Practice. This division has cooperated with more than 50 industrial

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SUPER-FARMING *plus*

The home that vegetables built

I WILL wager that if you would put Erhardt Brothers of Allegheny County, Pennsylvania, on one of the poorest truck farms in the county and say, "Here it is boys; this place is a failure; do as you please with it," it would only be a question of a few years until the farm would be pointed out as one of the model places of the community.

I don't suppose Father and Mother Erhardt thought 30 years ago when they moved onto their farm three miles from Wilkinsburg and a few more from Pittsburg, with their four boys and two girls, that before many years the city would keep growing out to their farm until it would be rated and taxed at such a high value that only what we might call "super-farming" would enable them to still carry on and pay their taxes and other expenses with a good profit left.

NECESSITY did not drive them to this type of farming, for they have always done it on this farm, and now when high taxes are driving their neighbors out of business Erhardts are keeping serenely at it. Thirty years ago when livery stables and teams were common as garages and automobiles now are, Erhardts not only hauled all the manure they could find time for, but they were paid for doing it. Gradually, as the auto came, conditions changed.

HONEST VEGETABLES

By Hugh Fergus

A partial view of Erhardt Brothers' farm

Pretty soon they had to haul it free, and now it is so scarce that one of the boys told me they would gladly pay five dollars a load for good manure that commercial fertilizer cannot take the place of, for use in their hot beds and on certain crops.

Thirty years ago too when they had to haul their truck to the city over the dirt road, two loads a day made a hard day's work. Now a fine concrete road past the farm and a truck has speeded up this part of the work to make delivery of the produce a pleasure.

Whether the land was high in value or not, Erhardts have always used intensive methods as much as possible for the greatest returns. One combination is two rows of onions with lettuce between. Another is early potatoes—after the last cultivation, cucumbers are planted in every other row. The potatoes shade the cucumbers until they get a good start. This means the potatoes have to be dug with a hook, but the digging is as good as a cultivation for the cucumbers. All crops are gotten in early so that most of the farm except that part in crops like asparagus and rhubarb, grows two and sometimes three crops in one year.

YEARS of experience have shown them that they have to make a study of their farm to discover which part is best suited for the various crops. For instance some parts are well adapted to asparagus while they might as well not plant anything as to try to grow asparagus on other parts. Soil where strawberries do best is not adapted to good bean growing, and so on.

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¶A means to Better Cotton resorted to by growers in the Golden State—

One Variety

By LAW

By *Laurence W. Taylor*

County Agent, Bakersfield, California

A LITTLE farmer's aid that is really helpful came out of the last California Legislature in the form of a law to protect one variety cotton areas in the state. The law recognizes nine such areas and prohibits the growing of any kind of cotton except Acala cotton in them.

It is well known to all cotton growers that cotton cross-pollinates readily in the field and that cottonseed is easily mixed in the gin. Where different varieties of cotton are grown in the same community and ginned at the same gins it is not possible to keep the seed pure and the varieties from mixing. It is also well known that mixed cotton seed produces mixed cotton of uneven staple and unreliable quality. Such cotton has always been bought by the mills

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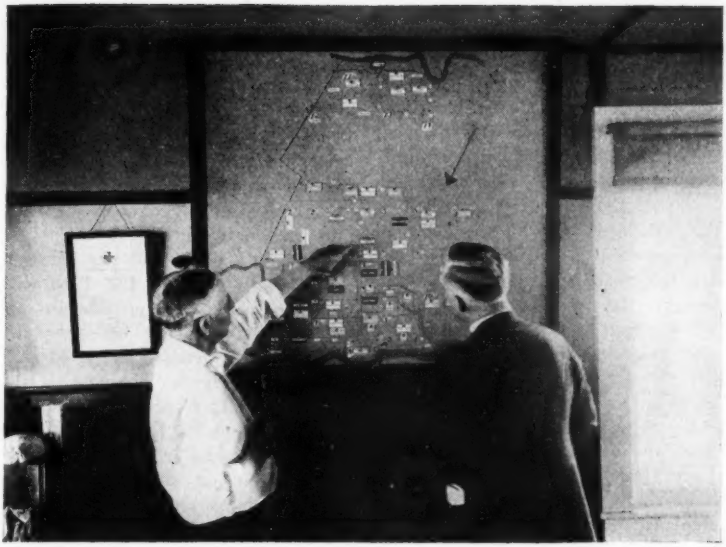
Uniform growth from uniform seed is possible only in one variety districts



A Maryland farmer explaining colored tags with which he records crop rotations on each field

FERTILIZER EFFICIENCY

By Arthur M. Smith, Ph. D.

Maryland Agricultural Experiment Station

Here we have all the facts. To make a profit with the use of fertilizers, a farmer needs to have the best and fullest information available. This we always try to give.— THE EDITOR.

NOWHERE does the old saying, "He profits most who serves the best", apply more fully than in the business relations between fertilizer manufacturers and farmers. The whole idea in using fertilizers is to increase the efficiency of crop production; first, by increasing the yield per acre and thus lowering the unit cost; and second, by leaving the soil in as good or a better state of fertility after the harvest as existed at seed time.

Efficiency is simply a collective term for the right thing at the right place, at the right time. With reference to the use of fertilizers, it means a fertilizer material or mixture of honest intrinsic value, applied in sufficient amounts to a soil and crop in need of the plant-food elements it contains. Obviously it is to the mutual interest of both farmer and manufacturer that the conditions for the efficient use of fertilizers be understood as fully as possible.

The nutrition of field crops depends primarily on the amount and the concentration of plant-food elements contained in the soil solution. A favorable temperature and supply of moisture; the relative solubility of the plant-food elements contained in the soil, supplemented by those supplied in the fertilizer; and the physiological characteristics of the plant itself are the positive factors which determine the amount of growth.

To obtain 100 bushels of corn or 1000 pounds of cotton to the acre, the total amounts of nitrogen, phosphorus and potassium that these crops will consume must be present in the soil solution at some time between seed-time and harvest. If a soil contains sufficient quantities of these elements in such a form that they will be dissolved as rapidly as required by the crop, there is no need to purchase them. Or if through crop rotation, manuring or tillage, sufficient amounts may be added to the soil, or made soluble in the soil moisture more economically than is possible by purchasing them in fertilizers, it is surely good business not to purchase.

CERTAIN soils for certain crops, under favorable climatic conditions, will always supply a sufficient amount of one or more of the three elements sold in fertilizers. Other soils, regardless of climatic conditions, will never supply, to many of our cash crops, a sufficient amount of either nitrogen, phosphorus or potassium. A third condition frequently exists, in which the soil will supply sufficient plant-food for the early or perhaps the latter part of the growing season, but fails at some critical period in the growth of the crop to supply the needed elements in adequate amounts.

THE first case includes those soils on which we find single elements or two-element fertilizers producing as large crop yields as do complete fertilizers. For example, in a grain and hay rotation, on certain soils in the Piedmont, the inclusion of potash in the fertilizer for wheat has frequently failed to increase the yield sufficiently to pay for the cost of this material. The second case represents those soils to which, for all ordinary cash crops, a complete fertilizer must always be applied. This includes the vast majority of soils in the Atlantic Coastal Plain. In the third instance the deficiency of nitrates in many soils at the time of seeding winter wheat explains the unusual value of even one or two per cent of readily available nitrogen in the fertilizer.

This deficiency is often entirely seasonal, and the following spring the same soils usually contain sufficient nitrogen to mature a large crop. A similar example is that of potash for potatoes. Many soils contain enough potash to produce innumerable crops of potatoes, were it readily available. In fact they get along very nicely during the early stages of growth, when the potash requirement is relatively small. But from mid-season on, the yield is rapidly and greatly reduced, unless sufficient potash has been applied in the fertilizer to insure that potash is not the factor which limits the crop.

It is such instances as these that have led certain soil scientists to conclude rather hastily that the analysis of soils for total plant-food has very little value. Soil an-

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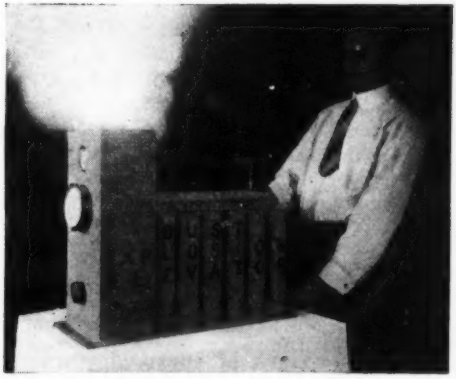
DUST means BUST

¶Would this apply to the dust swept under the bed? Here's a chance for further investigation.



By
C. E. Gapen
United States
Dept. of Agriculture

A FEW years ago a dust-ridden world knew practically nothing about one of dust's most emphatic qualities, its explosiveness. Now after a few years of study and experiment by the U. S. Department of Agriculture and others it has been found that many great industrial disasters have been caused by the explosion of harmless looking particles set off by a flame or electric spark.

Some of these substances in their original state would seem to be almost unaffected by fire, and certainly no one would look upon them as substances to be ground into explosives. The Bureau of Chemistry has tested hundreds of samples of dust from all sorts of manufacturing plants, elevators, threshing machines and from other places and has found that probably a hundred different kinds are explosive when fine enough and properly mixed with air.

Chemists have made various tests to determine the ignition points at which various dusts will explode and what means can be employed to prevent explosions. One of the big problems, however, has been to thoroughly acquaint the public with the danger that exists when dusts are allowed to accumulate on ledges and elsewhere inside plants. To call this danger to their attention a miniature grain elevator in which conditions similar to those which sometimes exist in commercial elevators has been constructed and is used for demonstration purposes.

THIS little machine resembles somewhat the rough model of a locomotive, and the similarity is accentuated when the explosion occurs lighting up the window in front like a headlight and throwing a blast of flame and smoke through the roof. At the front end and near the bottom is a screw cap which is removed in order to

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ALTOGETHER *and* We GET THERE

By P. H. *Stewart*

Agronomist, University of Nebraska

It ain't the individual nor the army as a whole, but the ever lastin' team work of every bloomin' soul.

ON the office wall of an Agricultural Extension Director in one of our corn belt states this framed motto hangs where all callers may digest it:

Sometimes as Extension workers we are accused of not quite following that bit of homely philosophy. Most of us are apt to develop some pet projects or lines of work and to plug along a certain rut which we feel leads toward the objectives. Maybe if we stopped our more or less habitual efforts for a bit and looked about to see whom we might call on for help, we could enlist enough assistance from others interested in the same project to build a real highway toward our goal. That last sentence sounds something like a generalized text for an abstract sermon but let us see if by illustrations it can be made more definite and less of a theory.

SUPPOSE, just for an illustration, we take some of the recent work done along that line in Nebraska. Probably other states have better and more complete work that might be used but the Nebraska situation will suffice to illustrate how other people besides the extension workers may be interested in agricultural projects.

For the past two seasons Nebraska in her extension work has put considerable emphasis on projects which dealt with Hog Lot Sanitation, Livestock Feeding Schools, and More-legumes—Erosion. By means of meetings, movies, publicity, demonstrations, and campaign letters, agents and specialists have attempted to carry

out these projects with fairly satisfactory results. But during the past 6 months an effort has been made to get other than extension folks to work along these same lines. Let us see how it has been attempted.

To begin with, the Nebraska State Bankers Association through their Agricultural Committee has developed what is known as "The Nebraska Plan" which involves a triangular form of cooperation involving the banker, the farmer and the agricultural college. As stated by the Chairman of the Nebraska Bankers' Agricultural Committee, the banker in an agricultural community is the keeper of the farmers' money. He is, of course, responsible to the farmer for its safety. He is called upon daily to make loans to farmers for the development of various farm enterprises. He, therefore, must know farming and the problems of the farmer to be able to pick out the worthy propositions, or else unwise and unsafe loans are sure to be made. If the banker in an agricultural community is in close touch with the most recent developments and recommendations of the agricultural college and experiment stations, he is in a splendid position to assist in putting desirable practices to work.

A double-deck cafeteria

SUPPOSE, for instance, County Agent Jones is working on the McLean county system of hog lot sanitation as one of his major projects. By meetings, publicity, slides and demonstrations, considerable interest has been aroused. A farmer who has heard more or less of the system stops to say a word or two about it to his banker, perhaps incidentally or because he wants to borrow a few hundred dollars to buy some sows or to build a hog shed. Because of the banker's financial contact he is in a vital position to influence the farmer one way or another.

If he himself has been "sold" on the sanitation project and knows of the serious pig losses through the so-called "filth-born" diseases, he will heartily encourage Farmer Jones to put his sows on new land and to either clean up the old hog house, or better yet, put his money into small colony houses which may easily be moved about. He may even have at hand plans for individual hog houses furnished by the county agent which can be given the customers. Encouragement from the banker to follow the sanitation system of raising hogs would help to get a cooperator for the project and at the same time the banker would be protecting his bank by loaning on a safe investment.

As another illustration, suppose the extension agent has been putting on livestock feeding schools, an important part of which has been the feeding of younger beef cattle on account of their greater economy of gain and relative profitableness. Here again perhaps the banker is called upon for a loan and again if he is familiar with the project, he can further it and decrease the risk of loss to the

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RENOVATING *the* Farm ORCHARD

By C. L. Burkholder

Purdue University, Lafayette, Indiana

THE farm orchard can be made a most profitable side line on the farm. This fact has been brought out time and again where records have been kept of small farm blocks of trees that were properly pruned, fed and sprayed.

It is good sounding theory to say "We will let the other fellow raise the fruit and buy our supply of him". Unfortunately, two or three bushels frequently make up the year's quota when the fruit must be purchased with cold cash, while 15 to 20 bushels could have been utilized if they had been grown on the farm.

In consideration of the fact that the main purpose of the farm orchard is to provide a continual supply of fruit for home use, it would seem logical to reduce the size of the orchard so that only enough fruit would be produced to supply home needs. The average farm orchard is too large for the time that can be given to its care, especially in the important matter of spraying.

Ten or 12 trees are sufficient to supply the needs of the average family, with enough fruit extra to pay for all of the cost of pruning, spraying and fertilizer. It would certainly be better to take good care of even five trees than to half care for 40.

Most farm orchards are planted entirely too close together, 25 to 30 feet being the average planting distance. The first step in renovating most home orchards is to remove a part of the trees so as to give the required room for the remaining trees. Apple trees can't spread out and grow low to the ground if they are crowded so close together that the only open space is above the trees. The removal of every other tree in the diagonal row is a good way to start this thinning out operation.

One of the first points to consider in pruning tall old apple trees is to lower the height of the trees as much as possible. This lowering process must frequently be spread out over several years. If the top of the tree is too heavily cut back and opened up the main scaffold limbs are easily sunburned, and this is invariably followed by flathead bores and the partial or complete destruction of some of the limbs. Usually six or eight feet is all that can be removed at one time.

The exact point at which to make the heading back cuts depends upon the location of the lateral limbs. It is very important to cut back to and just above a lateral branch which will tend to

Before

spread the future growth of the tree. Of course a rank growth of water sprouts will spring up near these large cuts and they will have to be removed either during the following summer or winter. If this is neglected the sprouts quickly replace all of the height originally removed.

All large cuts and especially those necessary in the heading back of the tree should be covered with a heavy white lead and oil paint. Figure 1 is an old neglected Wealthy Tree. It is so tall it would be next to impossible to spray all of it with a barrel spray outfit. It is so thick and brushy that the fruit could not possibly color up properly and have good flavor.

Figure 2 shows the same tree after pruning. The highest parts of the top have been removed down to side-growing laterals. The remainder of the tree has been thinned out by removing a large number of small branches. The tree is now low enough that it can be thoroughly sprayed inside and out and the sun light may now reach all of the fruit spurs throughout the entire tree.

OF course it is unfortunate that apple trees ever are allowed to become so high as this old Wealthy tree but the fact remains that this is a typical type tree that must be dealt with in many farm orchards. The heavy pruning out in this tree would never have been necessary if a yearly system of moderate thinning out and heading back had been followed.

As suggested before, the severe cutting is sure to be followed by a heavy growth of water sprouts and these must be removed each and every year. This should be accompanied by further thinning out of small branches and a reduction of the total height of the tree.

There is no question but what proper pruning is an important part of the work of renovating the home orchard, but unfortunately, most farm apple trees are starving for food and seldom have half as much water as they need. Time spent in pruning or better soil management practices is wasted if spraying is neglected or omitted from the program.

(*These important features will be discussed in an early issue.*)

After

¶Agricultural Experts Make Recommendations for Virginia and North Carolina Based on Exhaustive Study of Tobacco Situation—

1926 *Fertilizer* RECOMMENDATIONS *for* Tobacco

FOR several years there has been a feeling among tobacco growers that a more careful study of the influence of potash salts on tobacco is needed. Tobacco being a highly specialized crop and markets variable in their requirements, a great deal of care and work is needed to determine the best fertilizer practices that will produce the largest profit for the farmer.

The situation on the whole has been unsatisfactory. In many tobacco areas farmers have been at a loss to know how best to fertilize their tobacco crop.

In view of this confused situation—not uncommon to other crops and other regions—a committee of agronomists met recently at the State College of Agriculture, Raleigh, North Carolina, to study all existing experimental data and to make recommendations for fertilizing the tobacco in the flue-cured tobacco leaf districts of Virginia and North Carolina. This committee was headed by Dr W. W. Garner, Tobacco Specialist of the United States Department of Agriculture; Professor T. B. Hutcheson, Agronomist of Virginia Polytechnic Institute, Blacksburg, Va.; E. G. Moss, Director of Tobacco Branch Station at Oxford, North Carolina; W. F. Pate, L. G. Willis and C. B. Williams, Soil Fertility Experts from the State College at Raleigh.

After a careful study of all data available, taking into consideration the need for a working basis by which manufacturers could best serve the farmer's interest, the committee agreed to make certain definite recommendations, which we are pleased to publish verbatim.

I—Fertilizers for Bright Tobacco

Analyses of Mixtures—

1. *For Piedmont:*

   Eight per cent available phosphoric acid, 3 per cent ammonia and 3 per cent potash, or 10 per cent available phosphoric acid, 4 per cent ammonia and 4 per cent potash.

2. *For Coastal Plain:*

   Eight per cent available phosphoric acid, 4 per cent ammonia and 4 per cent potash.

   For sandy loam soils containing considerable organic matter, reduce the nitrogen about one per cent; and for very sandy soils increase the potash 2 to 3 per cent.

3. *For Control of "Sand-Drown" (Magnesia hunger):*

   For sections where "sand-drown" is prevalent, it is recommended that fertilizers carry 2 per cent of magnesia (MgO). This may be derived from sulphate of potash-magnesia, dolomitic limestone, or any other material carrying magnesia in forms known to be available to the plant.

Amount of Fertilizer:

Use 800 to 1200 pounds per acre in the drill at or just before transplanting.

Sources of Plant Food Constituents—

1. *Phosphoric Acid:*

   Derived from acid phosphate.

2. *Potash:*

   Derived from sulphate of potash-magnesia, muriate of potash or sulphate of potash.

   Available experimental data at this time from bright tobacco sections of North Carolina and Virginia have shown that muriate of potash generally produces tobacco of equal or better yield and market value than that produced by sulphate of potash. In view of the fact, however, that experiments have shown that an excessive amount of chlorine in fertilizers used on tobacco injures its burning quality, it is recommended that such fertilizers be compounded with the above named sources of potash in such proportions that the fertilizers shall contain not more than one unit of chlorine for two units of potash.

3. *Ammonia:*

   For Coastal Plain:

   One-half of the ammonia should be derived from organic sources; preferably cottonseed meal, tankage or fish scrap; and one-half from nitrate of soda or sulphate of ammonia; provided that at least one-half of the inorganic nitrogen be derived from nitrate of soda.

   For Piedmont:

   One-third of the ammonia should be derived from organic sources, preferably cottonseed meal, tankage or fish scrap; and two-thirds from nitrate of soda or sulphate of ammonia, at least one-half of the inorganic nitrogen being derived from nitrate of soda.

(*Turn to page 56*)

¶A new "Legume weed" fights for recognition as useful crop.

S. B. Nichols in Dalea

DALEA... on Trial

By A. A. Burger

DALEA is the new legume that is being boomed at the present time. But whether it is a plant or a weed, as yet, it is difficult to say. It has some very admirable qualities in its favor, and in time we may discover more; but it also has some qualities that seem to detract from its usefulness. Perhaps even these may be outweighed by the good.

At the present time dalea is a leguminous weed going through the testing period; it may remain in that class or it may become a useful plant. However that may be, the best way to introduce any new

(*Turn to page* 51)

Chicago Entertains

AGRICULTURE

¶American Society of Agronomy, Association of Land Grant Colleges, and American Soil Survey Association meets in "Windy City."

DID you want to know anything about our national agriculture and its many problems? Then Chicago was a good place to visit during the week commencing November 16 to obtain such information.

Many workers, well-known in the agricultural field were in Chicago at that time. The Honorable Secretary of Agriculture was there, many presidents of agricultural colleges, directors of state agricultural experiment stations, and of the various departments of the United States Department of Agriculture. Directors and workers in research and extension were well represented, and of increasing importance to our national agriculture, was the presence of many ladies prominent in home economics. Engineering and the Farm Bureau Federation were also well represented.

Especially must we mention the presence at the meetings of six county agricultural agents, the prize winners in the soil fertility program contest recently conducted by the Northern Division of the Soil Improvement Committee of of the National Fertilizer association.

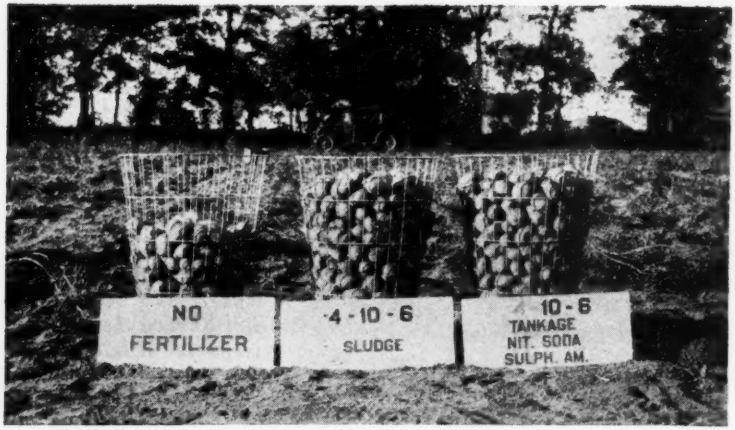
Laboratory research is of the greatest value when translated into more efficient production. In this work we cannot overestimate the importance of the extension forces and county agricultural agents.

The national agricultural organizations that met in Chicago arranged in the order of opening dates were the "American Society of Agronomy" which held its 18th annual meeting on November 16 and 17. The "Association of Land Grant Colleges" held its 39th annual meeting November 17-19, and the "American Soil Survey Association" on November 18-19.

As anyone who tried to attend all of the meetings knows, it was a very crowded week and for all interested in agriculture, a very profitable and eventful week.

In the wide range of subjects covered was reflected the increasing complexity and usefulness of our agricultural field and laboratory work. Many subjects of vital, practical, and scientific interest were discussed, but through all the discussion there seemed to be the one dominent idea—the need for

(*Turn to page* 34)



Results of experiments on Wisconsin Plainfield Sandy Loam

KING Potato

¶Read about spuds in the Badger Dairydom.

THE Wisconsin Potato Growers' Association held its annual show at Oconto on November 3 to 6 with an estimated attendance of nearly 4000 people. For real interest and constructive forward-looking plans it was probably the "biggest and best" that has ever been held.

Among those in attendance who will do much for the future of the industry were 600 rural school boys and girls who are interested in better potatoes. Fifty-five teachers who accompanied the youngsters each received a box of standard variety seed stock that will be studied by the students and eventually planted by them.

Actively engaged in making the show a success were potato growers from about 25 counties that have community potato work under development and organization. These communities vied for honors in county booth prizes, with Price and Oneida counties winning first and second awards with their truly remarkable exhibits. Nearly a hundred prizes were given individual exhibitors as inducements for them to bring their good potatoes into the competition.

Growers of certified potato seed were very much in evidence among the thousands who came to the show. There are now more than 150 farmers in the state whose potatoes are grown under the certification plan. J. G. Milward, potato expert of the Wisconsin College of Agriculture, announces that these farmers grew 167,000 bushels of certified seed this year. Much of this stock is being tested for mosaic disease by the college before it is shipped to growers in the South.

Similar experiments on Wisconsin Antigo Silt Loam

Holds HIGH *Court*

By Dr Guy A. Peterson

Madison, Wisconsin

THE test is made by sprouting a single eye from a potato. If no mosaic shows up on this sprout the tuber is free from the infection and is qualified to go into the southern market with a state certificate of inspection as a guarantee of merit. One peculiarity of this disease is that it may not appear to the eye in the northern grown seed, even though the infection is present and ready to make its appearance when the seed is sent to warmer climates. The laboratory test discloses the infected tubers, however, and by this method of control it is hoped to eventually control the dreaded disease.

Results of fertilizer experiments that had been conducted during the year and which were on exhibit at the show proved of particular interest. One of the most unusual of these was the variations in yield due to placement of the fertilizer. O. J. Noer, of the Wisconsin College of Agriculture, ran some tests on Fred Dopp's farm at Almond on Plainfield sandy loam. Fertilizers analyzing 4-10-6 were applied by hand at the rate of 900 pounds per acre. The fertilizer was applied with the seed, above the seed, below the seed, and by the side of the seed. Noer found that when fertilizers are applied in the row, best results are obtained when the application is made at the side of the potatoes. This resulted in about 20 bushels higher yields to the acre than were received by the same application when the fertilizer was put in with the seed. "This difference at the prevailing prices this year," says Noer, "is great enough to pay for the fertilizer."

The unfertilized plots yielded

(*Turn to page* 61)

¶Big, luscious berries; lots of spanked cream; no one around but me— Yummy-ummy!

Jeff

SOUTHERN STRAWBERRIES

By R. B Fairbanks

ONE of the most profitable truck crops grown in the South is the strawberry. More than half the acreage in the United States devoted to strawberries for shipment is found in the southern states. The leader is Tennessee, this state devoting about 21,000 acres to the crop. No state in the Union approaches this in acreage. Louisiana comes second with between 14,000 and 15,000 and Arkansas third with from 13,500 to 14,000 acres. Virginia usually grows around 10,000 acres and North Carolina approximately 6,000. Alabama grows from 3,500 to 4,000 acres, and Florida from 3,000 to 4,000 acres.

Of the early crop of strawberries, Alabama, Florida, Louisiana, Mississippi and Texas are the principal producers. These five states devote around 23,000 acres to the early berry crop. The second early crop comes almost entirely from Arkansas, North and South Carolina, Tennessee and Virginia. About 2,000 acres of this second early crop comes from the southern district of California. These five Southern states devote approximately 52,000 acres to the second early crop.

The early strawberry crop is grown entirely in the lower coastal plains section of North and South Carolina and Georgia, the state of Florida, Southern Alabama, Mississippi and Louisana, and Southern Texas. The medium early belt includes all of the South with the exception of that portion where the early crop is grown.

The earliest berries usually come from the Plant City district of Florida, these going to the market during December and January,

Picking strawberries, Lee county, Alabama

with the heaviest shipments in February. Usually a small quantity goes to market by Thanksgiving. By the time the shipments have played out around Plant City the northern portion of Florida in the Starke and Lawtey districts begin to ship, which is during the latter part of February. In March, shipment from this section becomes quite heavy. During the latter part of April, shipments commence from North Carolina, and further North. Similar successions in movement take place in Texas, Mississippi, Louisiana, Alabama and Arkansas.

IN deciding where strawberries are to be grown, several things must be taken into consideration. Transportation facilities for shipping the berries, of course, is among the most important. Being close to a supply of pickers, boxes, crates and other supplies, is also important. Then too, these well defined sections where strawberries are grown are usually so located that one section will not be shipping at the same time another section is shipping. This is necessary in order to avoid overstocking the market.

The strawberry will grow in the South on almost any type of soil, but it positively will not grow on a soil that is water sogged. Of primary importance is the thorough preparation of the soil. Also it is very important that the soil contain a liberal amount of organic matter. If an abundance of stable manure is available this of course will serve the purpose very well indeed.

Often preparation of the soil for strawberries is commenced one or two years before the plants are to be set. Where one looks ahead this far and turns under one or more cover crops, then thoroughly prepares and fertilizes the soil, and sets good plants, a whole lot has been done toward succeeding with berries.

(*Turn to page* 48)

With the Editors

EVERY useful magazine has a sound policy. The editors have given our policy earnest consideration. We feel that you would like to know what it is, and we want to tell you about it.

THE policy of BETTER CROPS is definite. It is to stimulate an interest in all factors pertaining to a more efficient agriculture and to give accurate information on such subjects.

IN developing a more efficient agriculture, you believe—as we do—that one of the most important factors is sound research and experimental work. It is our policy, therefore, to actively support all groups and agencies doing such work, especially the State Agricultural Experiment Stations and Colleges, and the United States Department of Agriculture.

WE believe that such research work is of the greatest value when translated into more efficient production and better living on the farm. Agriculture should be put on a business basis. The farmer is entitled to a larger share of the consumer's dollar. Living and working conditions on the farm should be improved. Consequently we are glad to heartily support the work of the agricultural extension forces and the county agricultural agents.

ESPECIALLY do you want all the facts, not selected facts. It is therefore a very vital part of the policy of BETTER CROPS to publish all the facts.

YOU want these facts presented by authorities in an easy-to-read and attractive form. To combine a soundness of purpose with brightness of treatment is one of our chief aims.

IT is the firm resolve of the editors to live up to this policy at all times.

THIS magazine is your forum. Will you suggest any improvements in this policy that would help you? Our office is at 10 Bridge Street, New York, south of the Customs House, near Bowling Green. We shall be glad to see you or glad to hear from you at any time.

Better Crops' ART GALLERY of the month

Dr. C. L. Marlatt, chairman of the Federal Horticultural Board. A great controversy has grown out of the action of the board in issuing a regulation under the plant quarantine act to keep out certain foreign bulbs after January 1, 1926.

R. H. Aishton, John H. Light, A. M. Loomis and Wm. H. Barr, representing Transportation, Agriculture and Industry on a visit to assure President Coolidge support of economy program.

Harry Steel, Ohio, Olympic heavyweight wrestling champion, chose farming in preference to career on professional mat.

U. S. Delegates to Pan-American Congress of Highways at Buenos Aires: Lt. George T. Howard, Dean A. N. Johnson, Charles M. Babcock, Congressman W. E. Hull, Admiral Lattimer, Frank Page, H. H. Rice, Pyke Johnson, T. H. McDonald, and Miss H. M. Sweet, secretary.

East Side New York boys bring produce to city to show their progress to the men who are sending them to agricultural school. The vegetables were used at a dinner of New Yorkers who paid $60 per plate. The proceeds will be used to make farmers out of more young fellows from the "Big Town."

Just another way of making the farmer's dollar go farther—Sonny submits to home influence, incidentally practising economy.

The Editor's C

SCIENTIFIC MEN IN AGRICULTURAL BUSINESS

The other day, we noticed two statements in the agricultural press.

The first was in an agricultural college magazine. It said that some 170 graduates of that institution were now associated in agricultural business—nearly all in technical positions with agricultural machinery, fertilizer, dairy, cooperative, and other organizations, selling goods and rendering service to the farmer.

The second statement was in a circular published by the United States Department of Agriculture. It showed that in 1923, in 48 states, 322,427 farmers were definitely influenced to change their cropping systems by the Agronomy Extension Services of the Agricultural Colleges and Experiment Stations.

These items record some of the activities of three major groups —the Farmers, the Agricultural Workers, and the Agricultural Business Men. These are the great divisions of the personnel of our national agriculture.

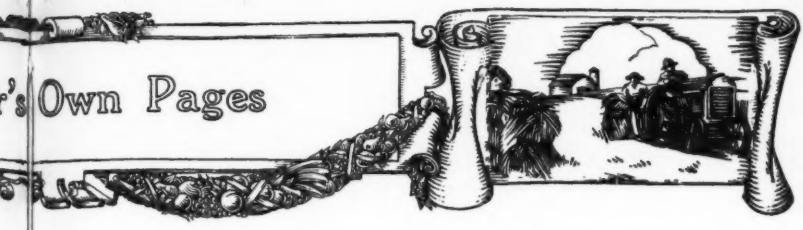
As groups, they are beginning to work together. Economic pressure is compelling this, driving home the idea that each group must understand and work with the others.

WHY? Because they are dependent on each other. Unity is not in each group as such, but in the larger view, the farmers, the scientists, and the business men as one large body in which is vested much of the responsibility for managing our greatest national asset—the land. There is no escape from this responsibility or its consequences.

The land has given a poor return perhaps—then the farmer is in poor financial condition. Agricultural business is bad—the scientist is discouraged. Criticism is common at such times, and appropriations are hard to get. The condition of any group, is the condition of the others. We are prosperous together or poor together.

The outstanding trend of recent years has been the growing realization of this mutual interdependence, and the development of definite systems of organization to express it and correlate it to practical affairs.

For instance, the Agricultural Colleges and Experiment Stations have organized effective extension departments to serve the



Farmer. The Scientists and Farmers are getting together to their mutual advantage.

The Business Man and the Farmer understand each other.

But this is not enough. What of the Scientists of our Agricultural Colleges and the Agricultural Business Men? The great need of this organized effort is for these two groups to know each other better. Much is being done, but much remains to be done.

There is much that the Scientist can give to Agricultural Business—often technical in character. There is much that the Business Man can give the Scientists.

The problem and the solution—how this can best be done—needs clearer definition. We must have a basis for cooperation between these groups, something they can all believe and act on.

To us there seems to be only one such basis. It is for each group to actively support the soundest possible research and experimental work in all agricultural fields, and to accept the results whether in their favor or not—to make every effort to put forth the whole truth.

Only on some such basis can cooperation grow, and only by the support of such a policy can the Farmer maintain a decent standard of living from his land; can Agricultural Business permanently prosper; and can the Scientists in Agriculture work to their fullest capacity and usefulness.

"THERE AIN'T NO SANTA CLAUS"

A bit of every day slang! But when you have just been dealt one of Old Father Time's gentle "hard knocks" how often do you find yourself thinking along the same line?

Since the childhood day when we first realized that Santa Claus was a myth, we have constantly been losing some one of our pet illusions. But in its place has generally come a bit of good hard sense.

We, in agriculture, have lost a lot of illusions the past four years. This year has been full of good sense, consequently there is going to be a heap more sincerity in the holiday greetings.

BETTER CROPS steals a goodly share of that sincerity for its greeting to its readers — MERRY CHRISTMAS AND A HAPPY AND PROSPEROUS NEW YEAR.

Chicago Entertains Agriculture

(*From page 23*)

hard work in systematizing and organizing our agricultural work in field and laboratory to the end that there may be evolved a national program to guide our agricultural development. This was the outstanding idea we brought away from these meetings. Closely related with this need were discussions on the effect of the Purnell Act and the effect on rural life of increasing research in agriculture and home economics.

THE Society of Agronomy ably contributed to the solution of agricultural problems by offering a well-filled program covering "Methods and Relations in Extension Work in Agronomy"; "Soil Deterioration"; "Taking Agronomic Research to the Farmer"; "The Present Status of Corn Improvement"; "Controlling the Quality of Crops"; "Soil Bacteriology"; and particularly on "Base Exchange Phenomena in Soils".

The Association of Land Grant Colleges discussed a wide range of subjects in its different sections and divisions. The general session was devoted to the topic, "The Relation of the Land Grant Institutions to the Fundamentals of a Forward-looking National Policy for the Development of Agriculture, the Industries, and Home Making."

The Honorable Secretary of Agriculture addressed the meeting in general session on Wednesday evening, November 18. An interesting history of the Purnell Bill was also given. The other organizations represented at that meeting were the "American Farm Bureau Federation", "Engineering", and "Home Economics".

At other meetings of the general session, the Land Grant Institutions in their relation to the development of agriculture, the development of the industries and of home making were discussed.

IN the sections on agriculture, engineering, and home economics, papers of a wide range of subjects vital to the different fields were presented. The agricultural section included papers on resident teaching, experiment station work, and extension work. Unfortunately, however, space does not permit of reporting in detail.

The work of the American Soil Survey Association, in a few words, is to thoroughly systematize the field work and knowledge of our soils. This is important work. The Association is a vital factor in its continuance.

The more important subjects discussed were soil profile studies: prairie, northern timbered, southern, and western soils. Field problems and methods also received a prominent place. Of particular interest to many workers was a paper on "Soil Map Reproduction". Members of the Bureau of Soils, United States Department of Agriculture, gave interesting observations on the soils of Cuba and Haiti.

The meetings closed on Thursday evening, November 19. Everyone interested in the progress of our agricultural development and the formulation of a national program for agriculture should be sure to read these papers when they appear in the journals of the respective societies.

FERTILIZER NOTES

DEVELOPMENTS in the fertilizer situation during November were such as to give pause to the manufacturers in their operations for the coming spring's business, and the price trend was again downwards on both ammoniates and phosphates. The situation was reported as unfavorable in the tobacco growing sections in the north, with farmers cutting down, but in the Southern States the outlook for fertilizer consumption during the coming spring months continued reasonably favorable.

The prolonged spell of indifference on the part of fertilizer mixers is believed due in some measure to a general fear that the nitrate of soda market might repeat last year's performance, and go into a slump at the height of the season. This fear, it was felt among trade members, might account for the extreme conservatism of the mixers in their purchasing of materials. The market for nitrate has held up sturdily thus far, however, and gives promise of continued strength. That this view is shared by the manufacturers of commercial fertilizers is indicated by the more numerous inquiries reaching sellers during the closing week of November.

WITH a heavy crop of cottonseed meal this season, this material has assumed greater importance and it is believed that meal will be used as an ammoniate more largely that ever before this year, replacing in part other materials normally used.

Potash market conditions showed no outstanding changes. The manufacturers are covered on their season's requirements on this material, this being one item on which they have been able to figure their forward costs with certainty. Stabilization of the remainder of the market to a similar degree would be welcomed by the industry.

HOLDERS of bone materials in the Chicago market who had been looking for higher prices on their stocks were forced to start the unloading process early in November, after buyers had held off the market for several weeks. This precipitated a general downward movement in quotations, and carried the average price for the group down, being offset in part by the firmer position of the market for Florida phosphate rock. Car shortage was a serious factor in the latter division of the phosphates market, interfering with contract shipments to some extent.

Fishing on the Chesapeake has closed for the season, and while authentic data regarding the make of scrap is not yet available, it appears that production for the 1925 season greatly exceeded that of last year. Prices on this ammoniate have remained about steady,

an advance in the price of the dried scrap failing to hold.

SUMMING up the situation in relation to the outlook for the balance of the season, it appears that there is still considerable filling-in buying to be done. Mindful of the expensive lessons of the past the manufacturers of mixture have not let their optimism run away with them this year, and while the consensus of opinion among the makers of commercial fertilizers indicates that a material gain over 1924 consumption figures is looked for this year, most of the mixers have been reluctant to turn out stock in heavy quantities in anticipation of this demand. Many of the manufacturers, it is reported, have arranged for sufficient stock to take care of their contract requirements, with a conservative surplus to take care of prompt shipment business during the height of the shipping season. Unless there should be some radical change of destructive character, however, it is expected that most of the manufacturers will find that they have under-bought in the materials market and re-enter later on for additional supplies.

* * *

PRICE TREND IN FERTILIZER MATERIALS

THE FOLLOWING PRICES ARE THE AVERAGE PRICES PER 100 POUNDS FOR FIVE SELECTED* POTASHES, AMMONIATES, AND PHOSPHATES. THE COMPARISONS ARE MADE AGAINST JANUARY 1, 1914, AS REPRESENTING PRE-WAR MARKET VALUES:

Material	Current	Month ago	Six months ago	Year ago	Pre-war Jan. 1, 1914
Potashes.....	$1.31	$1.31	$1.29	$1.23	$1.35
Ammoniates..	2.61	2.61	2.60	2.56	2.14
Phosphates...	.63	.6385	.5780	.5715	.57

* The five selections under each heading are:

POTASHES	AMMONIATES	PHOSPHATES
Kainit, bulk	Sulphate of ammonia	Acid phosphate, 16 per cent
Manure salts, bulk	Blood, dried, New York	Bones, rough, hard, Chicago
Muriate, bulk	Fish scrap, dried, works	Bones, ground steamed, Chicago
Sulphate, bulk	Soda nitrate, spot	Rock, Florida, 68 p.c. works
Magnesia, bags	Tankage ground, New York	Rock, Tennessee, 75 p.c. works

Foreign and International Agriculture

The purpose of this department is to help us understand the scientific, practical, and industrial agriculture of other countries and the international developments which result. The editor believes that such knowledge is now of the greatest importance in our agricultural prosperity. Every care is taken to insure accuracy—both of facts and their interpretation.

THE Hawaiian Islands, or at least that portion of the Islands devoted to pineapple culture, present a challenge to the fertilizer industry to evolve some method of keeping up the fertility of pineapple-growing land.

According to a special report received recently by the "Wall Street Journal", the country's leading financial paper, decline in a few years in the production possibilities of Hawaiian pineapple plantations appears inevitable unless the packing companies succeed in bringing to light some method of maintaining the fertility of their pineapple acreage.

That the experimentation which has been in progress for the past few years has not yet proved satisfactory is evidenced by the anxiety of the companies to obtain additional pineapple land. Of the companies operating in the Islands, one alone appears to have solved its problem for a number of years to come through purchase of the undeveloped Island of Lanai, about 70 miles from Honolulu, where a town has been built and planting is in progress with the first crop yield due in 1926.

ANOTHER company has been forced to turn its attention elsewhere in the Pacific, notably the Philippines, where attempts are going on to change land-holding laws to permit of plantation establishment. Samoa and Tahiti are being investigated by experiment and planting.

Hawaii's 1925 pack of pineapple approximated 7,200,000 cases, as compared with 6,826,000 cases last year. By far the bulk of this production comes from in and around Honolulu, although that does not necessarily imply that the fruit is grown on Oahu Island. In pineapple culture, high land produces the best results. The plant requires little water, but even the high land in Hawaii after two or three plantings becomes practically useless to produce a crop worthy of packing.

With scientific fertilization it is believed, the land might again become valuable, but once ploughed it suffers enormously from erosion, owing to the softness of the soil and the heavy rainfall. Use of paper in pineapple planting, which was started extensively a few years ago as a means of solving the growers' problems, has been found to frequently intensify erosion by permitting downpours to tear gullies between rows.

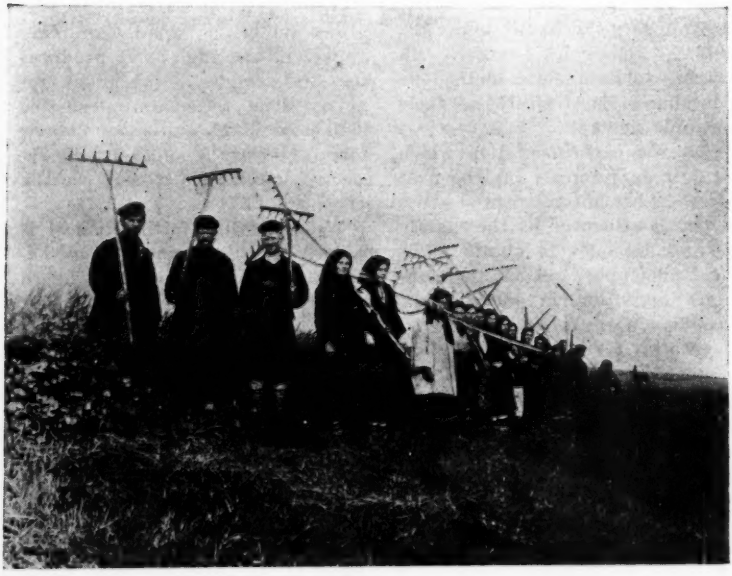
Pineapple fields are washed away at an alarming rate, whole hillsides being undermined. Growers must constantly seek new land, and there is, of course, a

limit to this search in the Hawaiian group of islands.

Enormous acreages are still untouched, but a large part of the idle ground is under control of sugar plantations, which have come to realize the danger to their watersheds from pineapple culture. Upland pineapple fields render the land used unfit for forestation, badly needed; cause silting of irrigation systems, and often increase the rapidity of the rain runoff to a dangerous extent.

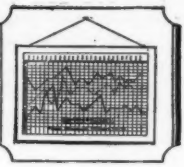
PINEAPPLE packers operating in the Islands depend to some extent upon the offerings of private growers, but most of them have developed, or are developing, their own acreages. Under the impetus of heavily increasing consumption, the production has increased from 2,670,000 cases to 7,200,000 cases in ten years. Chief opportunities for new development appear to be on Lanai and Molokai Islands.

Among the latest developments in the handling of pineapples grown at points distant from the canneries is that of the company carrying on at Lanai. The pineapples will be shipped to the Honolulu cannery on steel barges, now building. The holds of these barges will be filled with water and the pineapples will be flumed aboard where they will fall into tanks, preventing bruising and preserving freshness. As the holds fill with pineapples, the water will be forced out.



Russian peasants dressed in the native costume engaged in bringing in the 1925 harvest. The crop, a bumper one, has exceeded the expectations of the farmers

AGRICULTURAL DEVELOPMENTS



By P. M. Farmer

Fish Oil Effective in Arsenate of Lead Sprays

Efforts to improve the sticking qualities of orchard and garden sprays have recently resulted in the discovery of valuable facts regarding certain oils. The Bureau of Entomology of the Department of Agriculture has carried on many tests at places in Massachusetts and New Jersey, and one of the outstanding facts brought out is the superiority of fish oil as an adhesive in arsenate of lead sprays.

Most dependable results were obtained in 1924 because of the above normal rainfall in the regions where the tests were carried on. The materials used were linseed oil, fish oil, and corn oil, and in effectiveness they ranked in the order named. Linseed oil was found to adhere more closely to the foliage than fish oil but the difference was so slight as to be of little significance. Corn oil is not so good as either of the others but is more efficient than various other substances tried previously, such as soap, glue, casein, molasses, glucose, and flour.

Fish oil is to be recommended for large spraying operations because of its cheapness. For small areas, linseed oil can be used very well as the increased expense is not great and this oil is always easily obtained. Either of these oils is used at the rate of one gallon to 400 gallons of spray solution. The oil should be added after the arsenate of lead has been well mixed with the water and while the solution is being agitated.

"Large quantities of fish oil are used in the gipsy moth spraying operations where a grade known as "light pressed," a yellow-brown product, is used. Cheaper grades known as crude fish oil contain stearin which may clot and cause trouble in the operation of machines.

Because arsenate of lead solution sticks so well when fish oil is used, livestock should not be allowed to graze on vegetation under trees that have been sprayed with the mixture.

Some Cheer for Corn Farmers

While the price of corn has been slipping down the greased pole, there are reasons why the situation should not be considered as bad as it looks to the casual observer. As is well known, all but about 20 per cent of the corn crop is annually fed on the farms and livestock prices this fall are very satisfactory.

Economists of the Department of Agriculture point to a likelihood of increased feeding demand and call attention to smaller supplies of some other feed crops. They also say that farm carryover of corn is very low and that the crop although much larger than that of last year is only 90,000,000 bushels larger than the five-year average and that consid-

ering the low stocks the total supply for the year is less than the five-year average.

The barley crop for the year was 40,000,000 bushels above 1924 but half of the increase was in California where last year's crop was nearly a failure. This year the grain sorghum crop was reduced by about 21,000,000 bushels which makes up to a great extent for the increase in barley. Another factor is that the hay crop is considerably below the five-year average and that the oat crop while above the average for the five-year period is about 70,000,000 bushels smaller than last year's crop and the total supply, taking into account the supply on hand, is about 23,000,000 bushels less than last year.

Other factors mentioned by the economists are that the ratio of corn and hog prices is such as to stimulate feeding of hogs to larger weights, and in fact hogs shipped to market are already showing heavier weights than a year ago. Also it is probable the number of spring pigs may be increased if prices continue favorable, so that large quantities of corn may be required for summer and fall feeding before another crop is produced.

The Smell of Cotton

The old saying "only a smell" has always connoted something hardly worth mentioning, but if the work on cotton odors being carried on by chemists in the Department of Agriculture continues as promising as at present a mere smell may be the means of suppressing the toughest customer in the cotton belt, the boll weevil, and it may, in addition, supply an outlet for a waste product of beet sugar manufacture. More experimental work is necessary, but it has been determined that the odorous constituents are, at least in large part, ammonia and trimethylamine.

These substances have been found in the emanations of the living plants, and field tests have shown that trimethylamine possesses some attraction for the weevil. Just how successful it will prove as a bait is yet to be shown, for field conditions are much different from those in the laboratory.

If this chemical proves successful as a lure for the insect, large quantities of it can be made at low cost from waste sugar-beet molasses, a by-product for which manufacturers have long sought a profitable use.

Use By-Product of Car and Tractor

The automobile and tractor provide no profit in the way of fertilizer, but old oil drained from the crank case is now widely used by farmers for various purposes, including the protection of hogs against lice. The New Jersey Agricultural College has gone a little farther than usual in making recommendations for the use of this former waste. It is suggested that the oil, with its content of metal particles and diluted with fuel oil which seeps through from the cylinders, be left in an open container until the gasoline has largely passed off by evaporation and the suspended particles have settled to the bottom. The oil is then still too thin for engine use, but is satisfactory for lubricating most farm implements. The heavy residue may be put into a convenient container and applied with a brush to the scouring surfaces of plows and cultivators to save them from rust. Another use for the dirty oil is for spraying on stagnant pools to stop the breeding of mosquitoes.

REVIEWS

Factors Affecting Farm Profits in the Williston Area, Florida, Bulletin 175

Farm management is the study of the business side of farming. It deals with the business aspects of farming, as opposed to the technical aspects. Thus, it does not deal with how to grow corn, but with whether to grow this crop, what acreage of it, the cost of growing it, and the returns to be expected from it.

A farm survey of 120 farms in the vicinity of Williston, Levy county, Florida, was made during the summer of 1923 by Professors J. E. Thurlington and H. G. Hamilton. The principal soils covered by the survey were Norfolk Sand and Norfolk Sandy Loam, about 75 per cent of the area being of the latter type of soil. This soil was well adapted to the growing of cucumbers, the outstanding crop. Approximately two-thirds of the crop acres were given over to cucumbers, corn and peanuts coming next in order of acreage and importance.

The average labor income of these farms was $807, the lowest being minus $3,586 and the highest $19,925. The average capital per farm was $8,111, 80 per cent of which was fixed capital and 20 per cent working capital. Receipts from the sale of cucumbers averaged 72.3 per cent of total.

One outstanding feature of this survey was that as capital increased labor income increased until a capital of $12,000 was reached. Another important finding was that with the land valued at from $40 to $50 per acre the labor income was higher than where land values were higher or lower.

In a careful study of the crops sweet potatoes-sugar cane-hay-cotton-peanuts-watermelons - pasture-corn and cucumbers, taking into consideration cost of growing, adaptation to soil and climatic conditions, certainty of crop, acre value and capital required, cucumbers proved to be the most profitable.

For anyone interested in making a study of their own particular farm as regards the selection of crops most likely to make them a profit and particularly to farmers in regions where similar conditions prevail, we believe this bulletin will prove a valuable guide.

Effect of Cropping Upon the Active Potash in the Soil, Texas Bulletin 325

So much has been written during the past decade about conservation of soil fertility that one wonders how long the haphazard American methods of farming can go on without materially affecting the producing power of our soils. A large amount of work has been done by chemists and agronomists in an effort to arrive at some tangible means of approximating soil fertility and formulating methods for maintaining the natural fertility.

Of recent years soil fertility studies have to a large extent been based on the amount of mineral elements removed from the soil by

the crops grown. It is perfectly obvious that any sound basis for a soil fertility program must take this element into consideration.

In Bulletin 325 Texas Experiment Station, G. S. Fraps, Chief of the Division of Chemistry, ably discusses the subject of effect of cropping upon the removal of active potash from the soil. All experiments were on corn and sorghum grown in succession. Phosphoric acid in the form of dicalcium phosphate, and nitrogen in the form of ammonium nitrate were added to all pots in the potash studies. A pot in every series had sulfate of potash added and was used as a check. The crop was harvested at the end of 60 days. All crops grown, as well as soil in the pots after all roots had been carefully removed, were analyzed.

Careful study of the experiments reveals that the decrease of active potash is not as great as the quantity removed in the crop. It is also evident that the amount of potash withdrawn from the soil increases with the active potash present.

In the correlation studies of the active potash removed from the soil and the active potash lost in cropping, careful observation shows that the relation is not the same in all cases. It appears that differences in the character of the minerals furnishing the potash, differences in soil condition as well as biological relation may to a large extent be responsible for such variation.

The amount of active potash lost from the soil in 409 pot experiments averaged 40.9 per cent of the potash removed by the crops. (Active potash means that dissolved by fifth-normal nitric acid). It is clearly demonstrated by the studies conducted by Professor Fraps that the determination of active potash in the soil is a useful and valuable method for making a study of the potash resources of a soil and a working basis for judicious use of potash salts in crop fertilization.

For those seeking a method for studying the potash needs of their soils we feel that the work of Fraps points the way. This bulletin should be carefully studied by all soil chemists and soil fertility experts.

38th Annual Report of the Director, Pennsylvania Bulletin 196

For a number of years experimental work of the several Agricultural Experiment Stations has been confined largely to the everyday problems of the farmer. Many valuable bulletins have been written and a large amount of invaluable service rendered the farmer.

With the rapid increase of our population the necessity for more careful conservation of our greatest national resource (soil fertility) and the increasing hazard caused by inroads of insects and diseases, need for a more extensive study of farm problems is apparent.

Only recently the "Purnell Bill" made available $20,000 a year for this much needed research work for each experiment station. Though much research is in progress, this additional appropriation will make possible considerable expansion of this line of work.

Some idea of the interesting projects already under consideration can be obtained by reading the 38th Annual Report of the Director of the Pennsylvania Agricultural Experiment Station, State College, Pa. This report should prove of interest to all agricultural workers, for it typifies the high ideals of those to whom is entrusted the future of our agri-

culture. If any civilized nation is to endure—surely it must be based on a permanent agriculture. With our experiment stations alive to their obligation to civilization—all that seems necessary is that all alike give those untiring workers your moral and legislative support.

Important projects are reported under way on the following: analytical service, agronomy, tobacco experiments, animal husbandry, botany and plant pathology, dairy husbandry, forestry, horticulture, poultry husbandry, zoology and entomology and animal nutrition.

Considerable attention is being given to fertility investigations, and a large amount of data is available. Work with culture, diseases and fertilization of tobacco has made considerable progress. Studies having to do with forest preservation are being made. During the past decade forests of Pennsylvania have been seriously damaged by insects and diseases. Outstanding in our minds is the "Chestnut Blight."

The American hen comes in for her share of the critical scientist's time. Artificial illumination to give her an added interest in her owner—promises by virtue of a compulsory 13 hour day to bring more dollars to poultrymen supplying lights.

Old Bossie has not been neglected. It seems the disease man (The Vet) is after her number—and the "pure food man" even follows her products as far as the final resting place, be it the glass of milk or saucer of ice cream. Investigations aiming to make Bossie a greater asset to civilization are under way. Surely Vitamines A B and C are to be given their rightful place in the rôle of life, and here Bossie we are told reigns supreme.

Fertilizer Efficiency

(*From page* 14)

alysis has the same value as any other inventory; for in no business on earth are all items in stock equally available for immediate conversion into cash; and, just as in business, certain classes of employees are subject to a more rapid turn-over, so in the soil certain plant-food elements are more readily influenced by biological factors.

THE somewhat typical cases cited above indicate that, consciously or unconsciously, fertilizer manufacturer and farmer are both seeking the same things, namely, the types of fertilizer mixtures and materials best adapted to definite soil and crop conditions, and the time- and place- utility values of commercial fertilizers as determined by the method and time of application. In this they are aided by the agricultural scientists of the state and national Experiment Stations.

It is an example of the spirit of cooperation in the search for truth: the scientist seeking the truth for its own sake, and we hope also for his own, that he may serve more effectively; the farmer seeking to use fertilizer more effectively in order that he may produce efficiently and live more fully; and the manufacturer seeking to learn the potentialities of his market and to know where it is and where it is not, in order that he may devote his energies to the fulfillment of the real fertilizer needs of the farmers.

With potash, as with nitrogen and phosphorus, the amount required in the fertilizer depends on the total amount present in the soil, the rate of availability when needed, and the requirements of the crop. Every pound of potash

sold in fertilizers to be used on soils deficient in potash, or for crops requiring more readily soluble potash than the soil can supply, not only creates a market demand for more potash by demonstrating its efficiency in crop production, but also proves itself a real blessing to the farmer who uses it.

Every pound of potash applied in fertilizers to soils containing sufficient available potash to meet the requirements of the crop rotation employed, is not only a direct loss to the farmer purchasing it, but represents also a loss to the potash producers through misdirected sales effort in trying to develop a part of the market which really does not exist. To continue to sell fertilizer materials for use under soil and crop conditions in which they are not needed, is literally trying to draw water from a dry well. In other words, the agricultural scientist, farmer, and fertilizer manufacturer all have a tremendous responsibility and opportunity, as well as a selfish interest, in studying soil and crop conditions to increase the efficient use of fertilizers.

Some examples from experiments in Maryland, as published in bulletin 247*, may be cited to illustrate conditions under which various fertilizer elements may be used both efficiently and inefficiently.

On the Chester loam, in the Piedmont Plateau, at the Howard county experimental field, an application of 400 pounds per acre of 4-10-6 fertilizer for wheat increased the yield 6.7 bushels per acre. On an adjacent plot this fertilizer with the potash left out, when applied at the rate of 350 pounds per acre, has increased the yield by 6.6 bushels per acre. Here the potash did not pay for itself. The necessity for nitrogen on this soil is shown by the fact that a third plot receiving 250 pounds of acid phosphate, but no nitrogen, gave an increase of only 2 bushels per acre over the yield of the unfertilized plots. Similar results were obtained on the same soil in Baltimore county. My own analyses of Chester loam from Baltimore county show it to contain about 2.8 per cent K_2O in the surface soil and 2.9 per cent K_2O in the subsoil. For many years to come, potash will not be a particularly paying proposition on this soil for grain and hay rotations.

Data obtained by the Pennsylvania Experiment Station on Hagerstown silt and clay loams showed that potash alone had no appreciable effect on the yield of corn, oats, wheat and mixed hay grown in a four-year rotation; but that potash applied with phosphoric acid has greatly increased the yields. It so happens that the Hagerstown soils frequently contain as high as 4.8-5.2 per cent K_2O in the surface and sub-soils.

But, contrary to the Chester soils, the Hagerstown soils, because of their fine texture and enormous iron and aluminum contents, are very easily puddled, and are frequently in very poor mechanical condition; so much so, that even heavy manuring often fails to release appreciable amounts of potash. On this soil the advisability of purchasing potash in the fertilizer depends very largely on the mechanical condition the farmer is able to maintain and the extent to which both lime and manures fit into his cropping system.

FOR grain and stock farming it is possible on both the Hagerstown and Chester soils to obtain maximum yields without purchas-

*McCall, A. G., Fertilizers for Maryland Soils, Bulletin 247, Maryland Agricultural Experiment Station.

ing potash, although on the latter it may be accomplished much more easily in spite of the lower total potash content, because of the difference in soil texture and in the amounts of colloidal iron and aluminum present.

To continue briefly, on the DeKalb silt loam in the Appalachian Highlands the Maryland data shows that while potash was essential for potatoes, it failed to increase the yield of oats or of hay. This soil contains slightly less potassium than the Chester loam. On the other hand on the heavier Sassafras soils of the Del-Mar-Via Peninsula, the Maryland experiments have shown that while only small amounts of potash are needed for wheat, relatively large amounts are essential for potatoes, tomatoes and practically all truck crops.

It has long been known that where the price received for the produce warrants, and quality of crop is the first essential, the soil becomes merely a place to stand, feed and water the crop; meaning that it is not wise to risk the possibility that the plant-food contained in the soil itself may not be available at the time it is needed.

With a four-year rotation of wheat, grass, tomatoes and corn on Sassafras loam at the Ridgely experimental field, potash gave increases worth 50 per cent more that when either nitrate of soda or acid phosphate were used alone. Phosphorus and potassium, as 750 pounds acid phosphate and 300 pounds muriate of potash per acre per rotation, produced crop increases worth $73.36 for the rotation; while when nitrogen was added the value of the increase amounted to $92.24. In this case potash was the key, but nitrogen and phosphorus could not be omitted.

And so on, the story could be multiplied. In Maryland, as in nearly every other state east of the Mississippi River, there are soil and crop combinations which do not need potash, where its use would be unprofitable; just as there are soil and crop conditions where commercial nitrogen is not a profitable investment, and also where phosphorus, and especially phosphorus only, is not a profitable soil treatment until the deficiency in potash or nitrogen or both has been supplied.

Regardless of the merits or demerits of the controversy concerning the value of soil analysis, the fact remains, that when a certain plant-food element is shown to be present in appreciable quantities, we may be able to devise a rotation, manuring or cultivation system whereby it can be made partly available.

For example it has been shown that the addition of nitrates to soils increases nitrate production in the soil, just as the addition of kainit increases the rate of availability of the potassium in the soil. But, if a soil is naturally deficient in any one plant-food element, we know that it will always have to be purchased, if a self-sustaining agriculture is to be maintained thereon.

The entire question of efficiency in the use of fertilizers is one of extreme interest to all of us; for we gain or lose mutually according to the degree of our individual success in solving the problem.

* * *

"Jim, I see that your mule has U. S. branded on his right hind leg. I suppose he was an army mule and belonged to Uncle Sam?"

"No, suh, dat U. S. don't mean nothin' 'bout no Uncle Sam. Da'ts jess a warnin'. Dat U. S. jess stand fo' Un Safe—dat's all."—Judge.

Dust Means Bust

(*From page* 15)

insert the charge of dust, which is approximately a small handful. This dust is placed in a small cup just below the outlet of an airpipe which carries a blast of air from a pressure tank when a trigger is released. The handle at the rear of the roof is used for pumping up the pressure tank.

The remainder of the equipment of the interior consists of two ignition points about 10 inches above the dust cap. These points are connected with batteries and the circuit is closed by means of a convenient push button. On the top of the elevator building is a circular opening about 8 inches in diameter over which a heavy piece of manila paper is fastened by means of a steel band tightened with a screw.

When the machine has been loaded and the paper securely fastened in place the spark is started and the air pressure released. The sharp spurt of air blows the dust from the cup into a cloud which is almost immediately ignited with the spark, producing an explosion which blows the paper roof off the building with a loud report and oftentimes with the production of a dazzling flame.

At the recent exhibition of chemical industries in New York the use of this machine for demonstrating the explosiveness of many kinds of dusts attracted more attention than almost any other exhibit. Aluminum dust was found to give the most brilliant display and it also provides terrific force. This dust, by the way, has put on some demonstrations of its own in factories. A few years ago such an explosion in a manufacturing plant where highly polished aluminum products were manufactured wrecked part of the plant and killed six girls who were working at the burnishing machines.

AMONG other dusts which have caused explosions resulting in heavy losses of property, and also of life are flour, starch, hard rubber, wood, milk powder, soap, spice, cork, feather, and the dusts produced in elevators and threshing machines. Grain smut has exploded and wrecked many threshing machines, and as a result of the experiments carried on in recent years devices have been perfected for cleaning out the dust as threshing is in progress and methods of wiring have been developed so as to prevent the accumulation of static electricity which causes sparks and often is responsible for setting off the explosion.

D. J. Price, in charge of the Office of Development Work of the Bureau of Chemistry, says the new equipment for demonstrating dust explosions affords possibility for testing all types of industrial plant dusts, a matter of great importance to the managers of large grain handling plants and manufacturing establishments.

* * *

A FRIEND IN NEED

An old darky was asked which he thought more important, the sun or the moon. "The moon," he replied. "The sun shines in the daytime when it's light anyway, but the moon shines at night when it's dark and you need light to find the chickens."

One Variety by Law

(*From page* 12)

because there was no other. It has always been bought under protest, however, the protest being greater and the price lower as the evidence of mixing was greater.

For many years, cotton experts, mills and buyers have been advising against the use of too many varieties of cotton. Communities where only one variety would be grown have been held up as an ideal. Some progress has been made along this line in the South, but the supply of one variety cotton is still meagre.

IN the West the cotton industry came into being only a few years ago. In the San Joaquin Valley it has been important for five years, although small acreages were grown previous to that time. Most of the San Joaquin farmers knew little of cotton culture and they followed very closely the advice of the man who introduced it into the Valley. Mr. W. B. Camp, of the Bureau of Plant Industry, United States Department of Agriculture, in charge of the experiment farm at Shafter, not only introduced cotton, but told the farmers how to grow it and started them off with the best seed attainable. He was careful to give them only the seed of the particular variety that he had found to be best adapted to the Valley conditions, the Acala variety.

The result was that as the cotton industry grew, the Valley made excellent records in the matter of cotton yields, quality and staple and much advertising was given to the industry. With an increased acreage from 4,000 acres in 1922 to 35,000 in 1925, with newcomers from everywhere settling in the valley to grow cotton, the problem of maintaining the one variety and the high quality became serious. Every cotton grower from somewhere else wanted to plant the seed he had used at home.

THE Kern County Farm Bureau, through its cotton committee, came to Mr. Camp's assistance. An educational campaign was begun and farmers and business men were told of the value of the one variety community. All farmers were urged to stick to the Acala cotton and leave the experimenting to the experiment station. A county ordinance was passed by the Kern County Board of Supervisors making it a misdemeanor to plant any but Acala cotton in Kern County. The county ordinance could not be made strong enough or far-reaching enough, however, so the Farm Bureau Committee took its fight to the state legislature.

The bill did not pass easily. There was much discussion of constitutional rights, and paternalism and other high sounding doctrines. In spite of this, the influential farmers in the valley were able to get their views over, and the bill was passed and signed.

The San Joaquin Acala cotton is an upland cotton, averaging full one to one-eighth staple and strict middling grade. It may vary from one inch to one and three-sixteenths and from middling to good middling. It is an extremely white cotton, it takes dye exceptionally well and it is used to a considerable extent with rayon in the manufacture of artificial silk. Last year the cotton sold

(*Turn to page* 50)

Southern Strawberries

(*From page 27*)

ONE of the troublesome things in the South in connection with strawberry growing is nematodes. These little parasites live in the soil, penetrate the small roots of the strawberry plants and cause a swelling or a knot to form on the roots, which produces what is known as root knot. This interferes with the water passing through the roots and naturally seriously injures and often entirely destroys the plants. Therefore it is very important to select soil that is not infested with this pest.

In the extreme South, particularly in Louisiana and Florida, new plants are set each season, as the growers figure it is less costly and more certain of a profit being made to go to the expense of setting new plants each year, than to carry the old plants through the summer. Where plants are set each year, they are set early, all the way from June to late September or early October, so as to give them time to grow and be in good shape to produce a crop of berries the following spring.

It is usually found advisable not to put any fertilizer in the drill before the plants are set, when they are to be set in midsummer, as this would make the grass and weeds all the harder to control. Usually when set at this time of year, the fertilizer is given in side applications in late summer and early fall, usually in August and October or early November. If the plants are set as late as August, or if they are set in the fall or winter, many of the best growers apply 800 to 1,000 pounds of an 8-5-6 or 10-4-8 fertilizer in the drill before setting, and give a side application of an equal amount later on.

Various fertilizer formulas are used. The best growers however, are rapidly giving up even as low grade as an 8-4-4 or an 8-5-6.* The 10-4-8 is now being very generally used by many. This high percentage of phosphoric acid and potash are necessary to hasten the ripening, and to give firmness and carrying qualities to the berries. In fact the growers have found that it is utter folly not to give a very liberal amount of potash, as if this isn't given, berries do not hold up well and reach the market in poor condition.

WHERE plants are set in summer, cultivation is usually started immediately afterwards and kept up until about Christmas. This is necessary to keep down weeds and grass and to push along the growth of the plants. The same general kind of cultivation is given to fall set plants, but only one or two cultivations are usually necessary. When set in winter or early spring, cultivation begins soon after growth starts in the spring and is kept up throughout the summer and into early fall.

As soon as the first crop of berries is picked, preparation for the second crop begins immediately. In those sections where new plants are to be set, new ground is prepared.

Liberal fertilization is given the old plants in August and again in October or early November. In fact these old beds are treated in

(* The percentages are stated in the following order: phosphoric acid, nitrogen, potash.)

exactly the same way as new plants are treated, both as to cultivation and fertilization. Some do not use very heavy amounts of fertilizer, but it is very noticeable that the most successful growers are usually those who use the large quantities of fertilizer. A ton to the acre, given in two applications, is not excessive at all. For these side applications given to old plants, the same analysis of fertilizer as used for the new plants is generally used. Not less than 6 per cent potash should be used and 8 per cent has been found desirable. Not less than 8 per cent phosphoric acid should be used, and 10 per cent is better. At least 4 per cent ammonia should be used and if the ground is not very fertile, 5 per cent should be used.

THE strawberry plants are usually mulched with pine straw some time between November and early March, depending on the location. The plants will gradually work themselves out from under this loose straw and as the berries are formed they are on top of the straw and protected from sand. This mulching is done not to protect the plants from cold weather, but to keep the berries clean and free of sand. Usually the straw is plowed under after harvesting is completed.

The berries from new plants are practically always larger, finer in quality and bring a better price than those from the two and three year old fields. This is the reason why more and more strawberry growers throughout the lower third of the South are setting new plants each season. Even though a little more work is required, it is the opinion of many of the leading growers in that section, that the additional yields are enough to offset this and make a profit besides.

One of the outstanding changes that has taken place in strawberry growing in the South during recent years is the increase in the amount of fertilizer used. A few years

Only the best berries go North

ago, 400 to 500 pounds per acre was considered liberal fertilization. Now 1,500 to 2,000 pounds is by no means uncommon and some of the growers even go as high as 2,500 to 3,000 pounds. Not only has the amount in pounds increased, but the quality of the fertilizer has changed considerably. Formerly the low grade 8-2-2 or 8-3-3 were generally used, but now a strawberry grower found using these low grades stamps himself as being non-progressive. The 8-4-4 is about as low a grade as any use, and most of them are getting away from this, using 8-5-6, 10-4-6, 10-4-8, etc. The 10-4-8 is becoming especially popular in the North Carolina belt. In many sections the growers are actually giving the plants four or five times as much plant food as they did a few years ago and it may be accepted as a fact that they are not doing this for any other reason than because they have found it pays them to do so.

THE principal varieties grown are Klondyke, Missionary, Lady Thompson, Aroma, Gandy, Excelsior, Ozark and Bubach. More Klondyke are grown than all other varieties put together, as this particular variety succeeds over most of the South. A good many Missionaries are grown in Florida and to a lesser extent in Eastern North Carolina. Around Pasadena, Texas the Excelsior is liked. The Lady Thompson is grown some in North and South Carolina. The Aroma is quite popular in some portions of Tennessee, Kentucky, and Arkansas, but taken as a whole, the Klondyke is by all odds the leading variety.

Some grow the berries in hills, others according to the matted row system. In most sections of the South the single row method is practiced, but in some sections, notably Florida, the double row method is practiced.

By thorough preparation of the soil, heavy fertilization, properly grading and packing the berries, the industry has rapidly come to the front in the South. Many millions of dollars are brought in to Southern growers, and taken as a whole, it is one of the most important truck crops of the entire South.

R. B. FAIRBANKS.

* * *

One Variety by Law

(*From page* 47)

at a premium of from one to four cents per pound above New York quotations. The average yield in Kern County in 1924 was 1.2 bales per acre.

The cotton has quality and the yield is high. When the mills realize that this fine grade of cotton is available, they will outbid each other for it and the San Joaquin farmer will profit as the result. Because of its protection in the law, the Valley will assume a unique place among cotton communities. The commercial activities that have grown out of the industry can feel safe in investing money in the Valley. The law assures progress in the industry and prosperity to those connected with it because as long as the law holds, the cotton from the Valley will be in demand and will sell at a premium.

Such laws as this are real farmer legislation. The farmer does not want laws that will make him rich without working. They never do anyway. What he wants is protection in his business from those influences which, through ignorance or malice, do not permit him to adapt his operations to modern conditions.

Dalea on Trial

(*From page 22*)

plant is to tell the truth about it, to describe its limitations, to tell just what it has done under practical conditions, and if possible, to give the results that have been obtained with it.

Systematic botanists have discovered this plant growing wild in the region of the Upper Mississippi Valley in a number of states. They gave it the jawbreaking name of Dalea Alopecuriodes. More recently, however, it was observed by Professor H. D. Hughes, of Ames, growing wild on the land in the western part of the state of Iowa. Because of the practical use that was being made of it by some of the farmers of that section, he made various tests on it at the experiment station and at the same time sent considerable of the seed broadcast to the farmers of the state.

HERE is what he has to say concerning it: "Dalea has been under observation for a number of years in western Iowa and has been plowed under as a green manure. The plant was tested under a great variety of conditions by the experiment station. That it has a considerable value as a green manure on certain soils is evident. We believe that a good many farmers will be interested in trying out this legume on the soils of their own farms, in this way determining its soil adaptability.

"A number of men were found in western Iowa who have been plowing this under with satisfactory results, as measured by marked increase yields of grain crops following. In this way, as excellent stands of clover and alfalfa were secured as could be desired. Dalea made fully as satisfactory a growth on soils requiring three tons of lime to correct the acidity, as on sweet soils. Acid soils will not produce biennial white sweet clover and hubam clover successfully without the application of lime. Some observations seem to indicate that the legume has been known to make a very satisfactory growth when red clover seedings failed entirely under the same conditions, due apparently to the low moisture content of the soil."

Harvesting the "Weed"

One of the first places that Professor Hughes observed the plant being put to practical use was on the farm of W. H. Wood, of Logan, Iowa. He was the pioneer in raising dalea—hence its name, Wood's clover. It was first observed by him several years ago, growing in the low level lands of the Missouri river bottoms, and because it seemed to do well in fall wheat, making a rank growth by fall, he determined to give it a more extensive trial. His own farm is on the river bottoms, and varies from Missouri river bottom gumbo, to a light soil consisting largely of river sand. It was on this type of land that he has grown it for several years with especially good results as a soiling crop.

IN his own words, this is his experience and his method of handling the crop. "I have been growing dalea continuously for 18

years, with the exception of two years when I had the land in corn. I sow it in the winter when the wheat is about two inches high and all danger of frost is past. By this time the wheat plants are nicely rooted, and the dalea seed can be worked into the soil by harrowing, setting the teeth rather slanting. Harrowing pays even for the fall wheat alone. The dalea makes a very rapid growth after the small grain is harvested, covering the ground quickly, and reaching the blooming stage about the middle of August. Any time thereafter, it may be turned under as a green manure.

"I raise winter wheat on ground that is too low for corn. During all the 18 years my wheat froze out only once, and it has yielded from 18 to 35 bushels per acre, grading either No. 2 or No 3, and weighing 62 to 64 pounds per bushel I attribute this remarkable yield to the fertilizing effect of the dalea. Wheat grown with dalea yields eight to ten bushels more per acre than that grown on ground without it. My ground thus continuously in winter wheat is growing better and producing more per acre from year to year."

Mr. S. B. Nichols of Clarksville, Iowa, who has had considerable experience with the plant has this to say about it: "I call it a velvet crop as it matures after the small grain crop is removed from the ground. Thus it is possible to secure two crops from the same piece of land in one season. I think it is the coming legume for green manure, for it will produce as much as 12 to 15 tons of green manure per acre. And this manure crop is evenly distributed over the land so that the farmer does not have to haul it or even touch it.

"As soon as the light ground farmer finds out what dalea will do for him there will be a great demand for the plant. The agriculturist has been very careful about what he takes hold of, or recommends, and well he may be; it has taken years for him to learn that sweet clover is a good soil builder, but now it is grown very extensively."

Mr. Nichols has made it a practice of sowing the dalea with any kind of an early small grain crop. Last year this crop seeded with the oats on May 31, at the rate of 15 pounds per acre, stood three feet and two inches high on the eighth of September, and would have yielded 14 tons of green manure per acre if it had been plowed under. The crop, however, was kept for seed. Mr. Nichols has found that the crop is at its best on light sandy land or on badly rundown farms, and that on sour or acid soil, it does not need lime. His land is located in one of the most sour soil sections of the state, and he unquestionably has had good success in growing it.

THE drawback to dalea is its lack of palatability to live stock. Perhaps in time this may be overcome. Mr. Wood has suggested the mixture of alfalfa with it; this, he says, cut for hay is eaten readily. He reports that, in 1923 a stack of dalea straw from which the seed had been threshed, was entirely consumed by stock. Dalea does have a disagreeable odor and it is on account of this that stock do not seem to like it.

In spite of this, dalea is a very rich protein legume,—one of the very high protein plants. The reports on it indicate that it contains 22 per cent of protein, whereas alfalfa contains but 11, sweet clover 11, and red clover 7½. Compared with our other common legumes it has a very wide protein ratio.

No one seems to know just how dalea was distributed, nor exactly where is its native home. It is thought, however, that it might have been scattered over the low lands where it was first seen growing by wild geese in their journeys across the country. But that is not important. Dalea does have some very strong features that commend it; there are also some strong features against it. These, in time may be overcome and even if they are not, the plant may find a useful place as a soiling crop.

This new legume weed is now being tried out under practical farm conditions in a number of states, and it should not be boomed faster than the actual facts concerning its value will warrant. If it should prove to be a good thing, there will still be time enough to boom it. In the meantime, the agriculturist will hesitate to recommend it.

* * *

Super-Farming plus Honest Vegetables

(*From page* 11)

SINCE they used manure so heavily in the earlier years, they have not yet had to resort to cover crops to keep up the humus content of the soil. However, no leaves, tops or waste vegetables are destroyed. They are all gotten back on the ground to be plowed under again. This year a 4-8-4 mixture of commercial fertilizer was used liberally on most of the crops. On crops like asparagus and lettuce, where quick growth of stems and leaves was necessary they used nitrate of soda in addition.

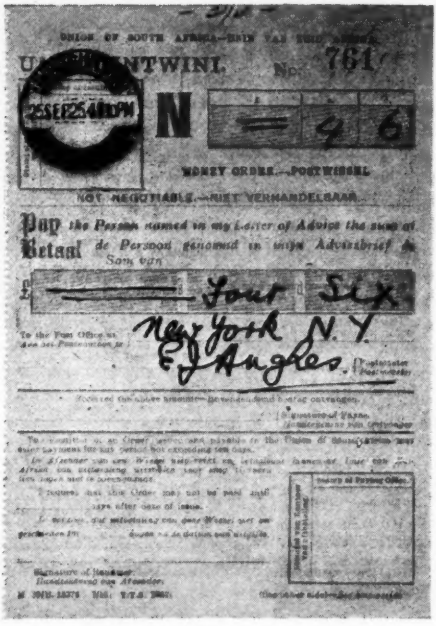
Even though their farm is hilly all rows are laid out almost as straight as a surveyor could do it. Perhaps this does not add any to their yields, but it certainly adds to the beauty of their farm. Most of the rows are laid out 28 inches apart and cultivated with one horse. Thus far they have had more satisfaction planting their seeds by hand.

A FEW hives of bees are kept. One of the boys said, "Partly as a hobby, and then to be sure our flowering crops like cucumbers are cross-pollinated."

During all these years the Erhardts have stuck to the policy of "Honest vegetables". All the produce from their 20 acres of truck is wholesaled to grocers and produce retailers. A grocer who buys their produce knows that the stuff in the bottom of a crate or a basket is just as good as it is on top.

This policy has built up such a reputation for them that they are still selling to some of the same dealers they sold to 30 years ago. This policy of "honest vegetables" has created such a demand for their produce that they do not have a telephone in their house but instead often have to figure how much they can cut each customer down to instead of having a surplus to wonder what to do with.

Better Crops *Invades* AFRICA



AWAY back in September, 1923, when the magazine BETTER CROPS first saw the light of day, little did its sponsors even suspect that in two short years it would penetrate the deepest wilds of the dark continent. Yet that is exactly what has happened.

The picture above is an actual photograph of a real money order just received to pay the postage on BETTER CROPS. It came all the way from Umbogintwini—pronounce it if you can.

H. E. Andries, who sent it, says that the amount is equal to one dollar. The rest of his address is Natal, South Africa.

The editors felt that county agents in the United States would be interested in knowing that their problems as discussed in BETTER CROPS are also of interest to Mr. Andries who evidently is trying to improve the agriculture where elephants and lions are farmyard pets.

The county agents may also be interested in knowing that as a part of the 1926 expansion program of BETTER CROPS, the teachers of vocational agriculture are to be added to the family. Almost every day expressions of interest are received from the men whose chief problem is impressing youngsters with the importance and dignity of farming.

The magazine feels sure that the older members of the family will heartily welcome the newcomers.

The N. F. A. Holds Southern Convention

(*From page* 9)

groups in effecting the practical reduction of the variety of their commodities. Major Foote has been associated with this work since its inception.

The speaker pointed out that the question is how may we most effectively eliminate waste? Waste is a drag on our national prosperity. Studies of simplified practice have shown that waste in production is often as much as 50 per cent. It was shown by the speaker how the turnover in various industries had been increased and profits increased by the adoption of simplified practice in the manufacture of electric light bulbs, bricks, fruit containers, drugstore supplies and other manufactured articles.

Simplification as a principle can be applied to any industry.

Major Foote showed how this principle affects the fertilizer industry and how the division of simplified practice can help in such work to the benefit of the manufacturer, the distributor and the consumer.

Dr. H. A. Morgan, President, University of Tennessee, showed very clearly how important it is to study the development of our man power which after all is our buying power. The address was entitled "The Handicap of Areas That Are Exclusively Rural."

Dr. Morgan showed that the chief influence in properly developing our man power is the common pool of community funds. It pays for our schools, it represents the possibility of the community's development.

Where do the funds come from? From two big sources; natural resources and commercial resources. Of the natural resources, only the soil and mines pay taxes into the community fund. This means that in an exclusively rural area the soil is the main support of this pool. On the other hand, in agricultural communities which are diluted with industry, commerce is taxed and so pays into the fund.

COUNTIES exclusively rural were poorer in every respect in population, in education and in power to buy. In agricultural areas in which industry was established, more children are in school, they stay in school longer, the tax rate is less and more money is available for developing man power which, after all, is civilization.

To effect this change, so that agriculture and industry can both contribute to the common fund, two important means are available. First, distribute electric power through exclusively rural areas so that industry can be established. In the opinion of Dr. Morgan, this is the real significance of the proper use of Muscle Shoals power. Second, where an exclusively rural county adjoins an industrial county, the two might be made into one unit. This has been done. In these two ways, agriculture can be diluted with industry and thus both the natural resources and the commercial resources will contribute to the development of our national power.

The meeting closed on Wednesday, November 12. The consensus of the convention was that it had been very successful. The next annual convention of the association will be held in June, 1926, at White Sulphur Springs.

1926 Fertilizer Recommendations for Tobacco

(*From page 21*)

II—Fertilizers for Dark Tobacco (Sun Cured and Shipping)

1. **Analyses of Mixtures—**
   Use 8 per cent available phosphoric acid, 3 per cent ammonia and 3 per cent potash.
2. **Amount of Fertilizer—**
   Use 600 to 800 pounds per acre in the drill at or just before transplanting.
3. **Sources of Plant Food Constituents—**
   1. *Phosphoric Acid:*
      Derived from acid phosphate.
   2. *Potash:*
      Derived from muriate of potash, sulphate of potash, or sulphate of potash-magnesia.
   3. *Ammonia:*
      Two-thirds of ammonia from organic sources, preferably from cottonseed meal, tankage or fish scrap; and one-third from nitrate of soda or sulphate of ammonia; provided that at least one-half of the inorganic nitrogen be derived from nitrate of soda.

III—Use of Lime on Tobacco

1. It does not appear that in ordinary practice, the use of lime is necessary for the correction of soil acidity in bright tobacco rotations. However, it has been fully demonstrated that small quantities of dolomitic limestone are effective in preventing "sand-drown" or magnesia hunger. It is therefore recommended that dolomitic lime be the only form of lime used on bright tobacco lands for this purpose.

2. Experience has shown that heavy liming on sandy soils is often followed by persistent decreases in crop yields. For this reason it is recommended that applications of dolomitic limestone to tobacco soils be limited to the amounts necessary for supplying the needs of the plant with respect to magnesia. It is suggested that for tobacco an initial application of one ton per acre of finely ground dolomitic limestone be used broadcasted over the entire area at least four months in advance of planting. Thereafter, on soils showing a response to this treatment an application of 1000 pounds may be broadcasted in the fall in preparation for tobacco the following year, provided that the rotation does not include tobacco oftener than every third year. If tobacco is to be grown oftener than this it is advisable to restrict the amount of limestone to 500 pounds applied in the drill before transplanting.

IV—Importance of High Grade Tobacco

In view of the fact, that in all probability quality of tobacco will play a more important part in the future in profitable tobacco growing than in the past, it is especially urged that bright tobacco growers exercise all possible precautions to secure the best possible grades.

(*Turn to page 58*)

Altogether and We Get There

(*From page* 17)

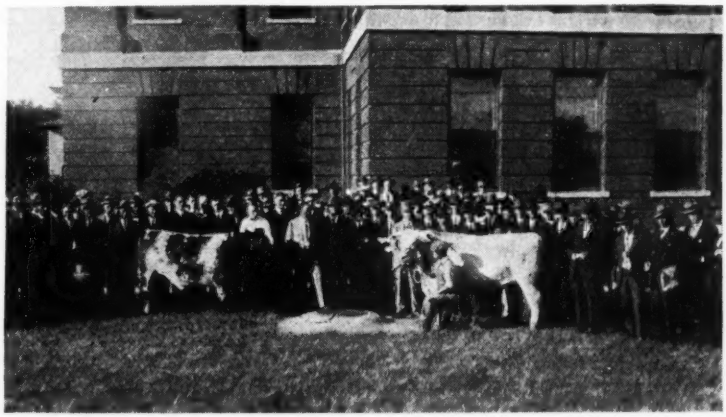
bank by suggesting certain recommended practices. If it is a matter of a loan for feeds, the banker's knowledge of the recommendations through the feeding project may help to influence recommendations as to what to buy.

ONE more illustration might be taken from the More Legumes Project. Incidentally or intentionally a farmer may discuss the crop plans for the year with his banker. If the banker is aware of the almost universal need for an increase in the acreage of legumes, he can make suggestions which add greatly to the effectiveness of the recommendations of the county agent. If the banker knows that much undesirable, imported alfalfa and red clover seed is being sold, he can warn the farmer of this and perhaps assist in getting seed that is adapted and satisfactory.

"But", the reader may say, "all that is fine, but how are you going to get this information to the banker in order that he may be in a position to back up the county agent?"

It has already been stated that in Nebraska the Bankers Association has worked out a banker-farmer-college combination. As a first step in the development of this plan, 225 Nebraska bankers from all parts of the state spent two days at the agricultural college last spring at which time talks and demonstrations were given along the lines of the main extension projects. The fundamentals of hog lot sanitation, feeding, soil fertility, legumes, and other important phases were particularly emphasized in an effort to get the bankers to see why extension workers were trying to accomplish certain things. And apparently the meetings were successful if success may be judged by the interest of the bankers and the reports which they gave.

As a further step regional meetings along the same lines are now being held to which bankers



Bankers and farmers meet at agricultural college

are bringing four or five of their farmer customers. With these men cooperating with and assisting the agents the major projects for any county should develop rapidly. The banker on account of his financial relationship to the community is in the keystone position to influence affairs. But men in other lines, such as lumbermen, seedsmen, and elevator men, if acquainted with the merits of a project, may also do much to assist in the development of lines of work that touch their business.

There is, of course, the element of danger that some folks may try to use a project for their own financial gain and thereby retard developments and cause difficulties and misunderstandings. But by honest above-board dealings and publicity this trouble would not seem serious. In the end the team work of "every bloomin' soul" counts.

Looking over Nebraska experiments with alfalfa

* * *

1926 Fertilizer Recommendations for Tobacco

(*From page 56*)

V—Burning Qualities of Leaf Tobacco

Market quality in tobacco has for a long time been determined by the physical characteristics and color of the leaf and these to a large extent govern selling prices in primary markets. In the final test for smoking tobacco, the burning quality of the leaf is a critical factor determining the acceptability of the different grades. It is, therefore, essential that increased attention be turned toward the improvement of this latter quality.

October 21, 1925.
Report of Tobacco Conference Held at N. C. Exp. Station.

W. W. GARNER (Washington)
T. B. HUTCHESON (Virginia)
E. G. MOSS (North Carolina)
L. G. WILLIS " "
W. F. PATE " "
C. B. WILLIAMS " "

Committee

Both Ends and the Middleman

(*From page 7*)

But after all, the basic thing is to find out, not how much more we are paying for distribution than for production, because nowadays you can't really draw a line between production and distribution, but whether the distribution side of the equation, insofar as it can be marked off from production, is costing too much and if so what is the remedy."

An investigation was recently completed by the Department of Agriculture into the profits and costs of middlemen, and it will be useful in a moment to glance at some of its results. It is necessary always to bear in mind, however, that statistical evidence that a certain economic function is costing too much is not altogether satisfactory, because statistics may leave some element of cost out of the reckoning. Moreover, middlemen who are accused of doing a poor job can always remind their accusers that they are free to do it better and cheaper if they can.

The experimental method of determining whether there is waste in distribution is that of the cooperatives. Where cooperative associations succeed in distribution in a big way, you have pretty good proof that they are eliminating wastes and cutting down expenses. That is really the only way in which they can succeed. There is nothing in the idea that cooperation gives monopoly control of commodities, as a result of which consumers can be gouged.

No cooperative association anywhere has gone as far as some industrial corporations have gone in controlling production and marketing, and yet there is no undisputed case even in industry of permanent monopoly control of prices. Even the United States Steel Corporation finds that the prices of its products vary, not with production costs, but with market requirements. It may, therefore, be taken for granted that growth in cooperation means that excessive distribution costs are coming under pressure.

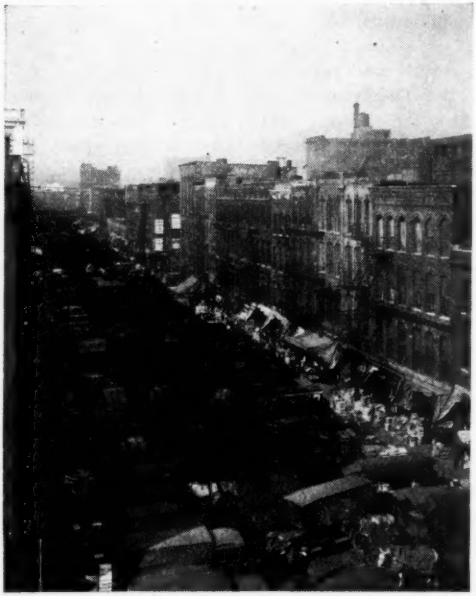
BUT before inquiring what the cooperatives are doing to cut down distribution costs, let us see what kind of a bill of health the latest Government investigation gives to the middlemen. Briefly, the finding of the Department of Agriculture is that the wide spread between the prices of many farm products in the country and their prices in the city does not represent an unfair profit taken by the middleman, but indicates that his service costs are too high.

Net profits taken by distributing agencies are declared to be an insignificant part of the total price spread. They rarely absorb more than 5 per cent of the consumer's price, and usually take less than this proportion. Where the trouble lies is in the middleman's costs of doing business. These are heavy in part because consumers demand much service, in part because there are too many middlemen for the amount of business they have to divide, and in part because distribution has not kept pace with production in economy and efficiency.

Does that mean that distribution is costing too much? Transportation by stage coach was slow and costly, but you could hardly call it too costly before the locomotive made cheaper transporta-

tion possible. It may be that distribution, as it is now done, is done as cheaply as possible, and that a new technique is required to reduce its cost materially.

Certainly the mortality among middlemen suggests that they are not without a powerful incentive to cut down their costs. If they fail to do so, the fact may as reasonably be attributed to lack of power as to lack of will. There can be no doubt, however, that if means are available to cut down the cost of distribution, whether by cooperation or in any other way, they will be found and applied, and the middlemen who can not accommodate themselves to the new order when it gets going will have to step aside for those who can.



Terminal wholesale market, South Water St., Chicago—"the most congested street in the world."

Here are a few facts, taken from the Government's records, which suggest that big savings—and that means big profits—are possible in distribution. Although margins in the retail meat trade, average about 24 per cent, the net profits of 130 stores were only 3.09 per cent on their investment.

In these figures are both stores that made a profit and those that made a loss. There were 101 stores that made a profit, and their profits averaged 4½ per cent, while 29 "loss stores" showed a net loss of 1-9/10 per cent. Profits from stores in New York, Chicago and Cleveland varied from practically nothing to around 10 per cent of sales. As a whole, however, the profits of the trade were considerably less than a fair return for the capital and labor put into it.

Many retailers were losing money and did not know it because they kept no proper records. Two out of seven stores in Chicago, Cleveland and New York were not successful. One merchant in Cleveland whose sales were about $12,000 had a margin of about 24 per cent of sales, that is to say, he sold his merchandise for 24 per cent more than it cost him. But after paying expenses, his yearly income was only $1,600. Had he rented his building, which he owned, and gone to work for wages, he could have made $2,800 a year. He thought he was getting along all right because he was making a living, whereas he was running his store at a loss and probably preventing the success of other nearby stores.

(Mr. Chew will conclude his discussion of this important subject next month.)

King Potato Holds High Court

(*From page 25*)

from 30 to 60 bushels per acre less than did those treated with a 4-10-6 mixture. Noer attributes the difference due to the placement of fertilizers to the fact that potato sprouts are very watery. The salts in the fertilizer make a concentrated solution outside the sprout which is injurious because it draws the plant liquids out of the developing stalk. Noer illustrates this by the familiar breakfast phenomena of putting sugar on grapefruit which draws the juices out from the fruit cell walls. He says that the above action will be much more severe in very dry years than in wet years for there will be little moisture in the soil to dilute the fertilizer salts. A special type of planter has been devised that will place the fertilizer on the side of the potatoes to conform with the findings of this experiment.

NOER'S results on a similar type of experiment on the Bowers and Walton farm at Arena two years ago showed the same relations. Here, with a thousand pound application per acre on sandy soil he found that the application by the side of the seed produced nearly three times as many potatoes as were produced on the check plot, and a third more than were produced when it was applied with the seed.

Noer's primary interest lay in finding the value of activated sludge produced by the Milwaukee Sewage disposal plant, but he used liberal applications of phosphorus and potassium as well. On the A. M. Olson farm at Harshaw, where Green Mountain potatoes were grown on clover sod, he found that with prices as they are this year the heavier applications of high analysis product paid the best. In this case it was the 900 pound application that proved to be most profitable.

These results show that on this farm a 900 pound application of a 3-12-4 mixture produced 155 bushels more per acre than did the non-fertilized plot.

Rate	Analysis	Yield, Bu. per Acre
No fertilizer	.....	*232.9*
500 pounds	*3-12-4*	*310.6*
750 pounds	*3-12-4*	*362.3*
900 pounds	*3-12-4*	*388.2*
750 pounds	*3-8-4*	*336.4*

Noer made experiments with sludge on different soil types. In all of these tests on fields that responded to nitrogen fertilization, sludge was found to be quite as efficient as tankage in mixtures where a portion of the nitrogen was applied from organic materials. On the whole he found that 500 to 1000 pound applications of fertilizer increased potato yields this year from 40 to 150 bushels. On some types of soils he found that sludge gave better results when mixed with inorganic fertilizers such as nitrate of soda or sulphate of ammonia, while on other types such as the Plainfield sandy loam plots at Almond, sludge when applied with potassium and phosphorus was quite as good as a mixture of these three substances with inorganic fertilizers.

Self Praise

(*From page 4*)

Things are often proved by antithesis—and paradox partners with Nemesis to slap athwart the thigh those who outstep the bounds of true modesty. Claim leadership and you shall find yourself following. Parade your purity and gain the reputation of being a pavement pounder.

There are those who cannot bring themselves to believe that "If a man write a better book, preach a better sermon, or make a better mouse-trap than his neighbors, though he build his home in the woods the world will beat a path to his door."

And I myself believe that to calmly and supinely recline on the spine and await the plaudits of the world is too far a swing of the pendulum. There is a happy medium that lies midway between ballyhoo and utter silence.

THE world is hungry for facts. After several centuries of progress man is now able to make satisfactory judgment on all things the truths about which he knows. No longer do we permit our judgments to be swayed and our opinions formed for us by professional swayers. The day of the editorial writer who jobbed out for his audience cut-and-dried policies has gone down in darkness.

Men want facts, news, statistics. And from these they are quite ready and willing to deduce the vital truths. Now strewn with thorns is the way of the propagandist, while the path of the purveyor of meaty facts is paved with flowers. Men welcome him into their homes, and to their firesides he comes with a bag-full of the latest statistics.

IF it is true, and I believe it is, that to advertise virtue is to raise a question as to its present existence, then we must beware how we spread the *facts* about its existence, for often the mere brief announcement of a fact, when that announcement was not called for, creates a deeper doubt—"paints the devil on the stump" which must first be scraped off before the true deity can be embellished thereon.

You ask me, "Are there any worms in that breakfast food you make?" and I retort, in a surprised, hurt fashion, "Of course not! Whatever put that silly idea into your head!" You believe me—and apologize.

You requested the facts. I gave them to you—and added just that correct degree of sincerity to my tone which fosters belief.

But suppose that the thought had never entered your head that there might be fish-bait in my "Breast-of-wheat", and you opened your daily paper tomorrow to find a bold, dominant advertisement over my signature to the effect that "There are no worms in my breakfast food."

That is simply stating the truth, isn't it? But what manner of thoughts rush into your head? You at once are brought to the belief that I had been experiencing trouble with my product, that customers had complained and that in order to scotch the thing I had resorted to publicity. You say to yourself, "I'll wager there *are*

worms in his breakfast food, or he would never have advertised that there are none!

"Methinks the lady doth protest too much!"

The world is now too busy to beat paths to the doors of the loyal, the virtuous, the honest, to the home of the man of ability and the cabin of the leader. It needs sign posts.

IT is hungry for facts about these folks. It is sorely in need of information about all things; it fairly aches to discover those in whom its confidence can be placed.

But we cannot help but believe that most men are biased in favor of themselves. We know too well that men often stretch half-truths to full-truths if the stretching can aid them to secure that which they are seeking. We know too, that while not actually the deliberate statement of an untruth, the suppression of a vital fact at the psychological moment operates as a lie and more effectively.

And, therefore, if his proofs of ability are publicly cried by the good soul himself, the poor fellow but pulls a world of doubt down over his head and is banished from the market place. We know he exaggerates!

Where is the thread, then, that leads from this labyrinth of the Minotaur, which the modern Theseus may wind into a ball and follow to the cool outer air?

If the world needs a sign pointing him out as an able, honest, energetic, loyal, virtuous fellow, yet he is not permitted to erect the guide post himself, how may he take full advantage during his lifetime of those valuable virtues which he knows are his, and which he knows the world of men will value can it but grasp the facts?

VOLTAIRE said, "The author who speaks of his own works is almost as bad as the parent who talks about his own children." And it has often been stated," Let another sing thy praise—be thou silent."

Self-praise is dangerous.

There are some things that must be felt, sensed and understood. Character, honesty, ability and leadership must be impressed upon those who surround us by deeds, not words. Our qualities must be of such an intensified nature that they seep t h r o u g h our countenance and sparkle in our eyes.

We must convey by manner, dress and action what we dare not say.

Or we can confide to a third person our various merits and he can, in perfect safety, pass the good word along to those whom we seek to impress.

When it becomes necessary, however, for one to take such a step, it should indicate clearly to him that the virtues he claims are not vital and virile enough, else the third party would, without instruction, parade the highways proclaiming those virtues to all and sundry.

Leaders do not need to claim leadership. The populace acknowledges their leadership, and appraises their value on the platform of past performance. Nothing they say can add or detract from their record.

And so I say, I become more firmly convinced each day that none of one's virtues can be increased one jot or tittle by one's raising thunderous ballyhoo in its regard.

Christmas Hints

In accordance with plans laid some time ago, the 25th of this month will be Christmas, and if rumor may be trusted, it will be one of the best Christmases this year. Arrangements are being made to deliver snow to all those who prefer a white Christmas. Those who would rather, may have coal delivered instead, at the regular price. (Try and get it in New York.)

It is always difficult to select appropriate Christmas gifts, and BETTER CROPS wants to be as helpful as possible in this respect. Electric light bulbs, pots of glue, bottles of ink, jam, and hammers are especially recommended by this department for the baby. Very young children can have no end of fun with these materials, and some mighty interesting decorative effects will be achieved wherever they see fit to play with them.

Gifts from parents to children and vice versa are always hard to select. One father we know presented his son with a new auto. The son gave his father a new check book.

The man with a talkative wife will appreciate a small radio. He can put the head phones over his ears and go on thinking about something else.

A red hot necktie will appeal to the man who forgot to put in an adequate supply of coal last fall.

A few indestructible decoy chickens, to be installed in the garage and practiced on during the winter months, would be nice for the country road speed demon.

You can't go wrong in sending photographs of yourself to very dear friends. They make right good kindling.

A couple of hand-painted feed troughs would be just right for the man who raises hogs.

Someone has said that after all, it isn't the gift, but the spirit of the giver, that counts. However, we must warn our readers that it isn't considered good form these days to send spirits around, especially through the mails.

* * *

M. M. Hobson of Florida wins this month's Whinnies prize for baby beef with this ad, run in the Des Moines Dairy Farmer: "FOR SALE—THOROUGHBRED AYRSHIRE BULL, four months old, weight about two thousand pounds."

* * *

A Pittsburgh dispatch carried in the newspapers some time ago told the story of a man who thought himself so ugly he hid in a cave, coming out only at night so as not to scare anyone. If this practice grows popular among ugly men there'll be an awful demand for caves.

"The Best is Generally the Cheapest in the End"

There is no commodity to which this trite proverb is more applicable than to a fertilizer. One fertilizer may have the same chemical analysis, the same general appearance or the same smell as another, but one of these may have much greater value as a crop producer, because its plant foods have been selected for their crop producing powers rather than on mere chemical analysis; because its materials have been more scientifically prepared and blended, or because the fertilizer itself is in far better mechanical condition for easy and uniform application. Such a fertilizer will give far better results and prove to be "the cheapest in the end."

"AA QUALITY" FERTILIZERS

comprise all the essential factors of the best crop producers that the practical experience and scientific research of over half a century have developed, and they are guaranteed by the largest fertilizer company in the world.

MANUFACTURED ONLY BY

The American Agricultural Chemical Company

IN different parts of Michigan, on sandy loam and clay loam soils, twelve sugar beet growers tried different fertilizers.

On some plots they used nitrogen and phosphoric acid alone; on others they used a high-grade fertilizer containing 2% nitrogen, 7% phosphoric acid, and 10% potash.

When the crops were lifted and returns received from the factories, the average results for the twelve growers showed:

Average yield of sliced beets was *1.5 tons greater* when the high-grade fertilizer (containing potash) was used.

Average sugar-content was *1.22% higher* when the same high-grade fertilizer was used. And—

Average profit was *$12.20 more* per acre.

Heavier crops, higher sugar-content, and bigger profits depend largely upon the available plant foods in the soil. Use a high-grade mixture—containing 10% potash or more—on your crops. You'll find that Potash Pays!

A successful agriculturist for one of the largest sugar beet factories recommends—with very few exceptions—the use of 300 to 600 lbs. per acre of a high analysis fertilizer which contains **more potash** than phosphoric acid. For muck soils 500 to 1200 lbs. per acre of 0-8-24, or 150 to 200 lbs. per acre of 0-0-50, is often recommended for profitable results.

POTASH IMPORTING CORPORATION OF AMERICA

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POTASH

PICA BRAND POTASH PAYS